Risk Factors for Elder Abuse Incidence and Severity Among Cognitively Intact Older Adults

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ABSTRACT

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Background: Elder abuse is increasingly recognized as a public health crisis and is associated with significant morbidity and premature mortality. At the foundation of this problem, elder abuse risk factors remain misunderstood. Previous elder abuse risk factor research contains methodological limitations that threaten the validity and reliability of existing knowledge. Further population-based research using standard elder abuse definitional/inclusion parameters and adaptations of established measurement tools is required to advance the literature. A major gap in the elder abuse risk factor literature is consideration of problem severity. Previous studies have focused on dichotomous prevalence/incidence outcomes, yet substantial variation exists in the extent, frequency, and self-perceived seriousness of the problem. Using data from the most methodologically rigorous population-based elder abuse study conducted to date – New York State Elder Abuse Prevalence Study (NYSEAPS) – this dissertation identified candidate risk factors of one-year incidence, objective severity, and subjective severity for elder emotional abuse, physical abuse, and neglect among cognitively intact, community-dwelling older adults.

Methods: The NYSEAPS used a random digit-dial sampling strategy to conduct direct telephone interviews with a representative sample (n = 4156) of older adults in New York State. Inclusion criteria captured older adults aged 60 years or above living in the community, cognitively intact, and English/Spanish-speaking. Elder emotional and physical abuse types were assessed using a modified version of the Conflict Tactics Scale. Elder neglect was measured using a modified

version of the Duke Older Americans Resources and Services scale. Potential risk factors were examined at several ecological levels of influence, including the individual victim, victim-perpetrator relationship, home living environment, and surrounding socio-cultural context. Multivariate regression modelling was used to identify factors associated with one-year elder abuse incidence in the general population, as well as factors associated with objective and subjective elder abuse severity among mistreated older adults.

Results - Incidence: Older adults who were younger, functionally impaired, living in a low-income household, and separated/divorced had significantly higher odds of emotional abuse and physical abuse in the past year. Older adults who were younger, separated/divorced, living below the poverty line, non-Hispanic, and in poor health had significantly higher odds of elder neglect in the past year.

Results - Objective Severity: Increasingly severe emotional abuse was predicted by younger age, functional impairment, shared living, Hispanic ethnicity, a spousal/partner perpetrator, and living alone with the perpetrator. Higher levels of physical abuse severity were associated with younger age, a grandchild perpetrator, and living alone with the perpetrator. Increasingly severe neglect was predicted by younger age, functional impairment, and low household income.

Results – Subjective Severity: Victims of emotional abuse were more likely to perceive the problem as serious if they were functionally impaired, highly educated, or endured more objectively severe mistreatment; victims were less likely to perceive the emotional abuse as serious if they lived with family or lived with their perpetrator. Physical abuse victims had higher odds of viewing their abuse with greater seriousness if they were a widow, single or experienced more objectively severe mistreatment; victims were less likely to perceive physical abuse as

serious if they lived with the perpetrator. Neglect victims reported higher perceptions of problems seriousness if they were functionally impaired, male, had a paid attendant perpetrator, or endured more objectively severe mistreatment; neglect victims had lower perceptions of problem seriousness if their perpetrator was an adult child or when they lived with the perpetrator

Implications: Using NYSEAPS data, this dissertation contributes the most valid and reliable elder emotional abuse, physical abuse and neglect risk factor knowledge available to date. It also extends existing risk factor research as the first known study to examine factors predicting elder abuse operationalized along a continuum of severity. Incidence-related risk factor information carries direct implications for policy and interventions aimed at preventing new elder abuse cases. Objective severity risk factor findings inform the development of targeted interventions to alleviate the magnitude of existing elder abuse cases and protect victims from heightened risks of mortality and morbidity. A focus on subjective severity carries indirect implications towards understanding victim help-seeking intentions and protective service utilization.

Table of Contents

List of Charts, Graphs and Illustrations	ii
Introduction	1
Theory	5
Literature Review	9
Aims	15
Design and Methods	18
Results	27
Discussion	97
Significance and Implications	113
Limitations	116
Reference List	118
Appendix A: Instrument Items	123
Appendix B: Proxy/Non-Proxy Analysis	125
Appendix C: Bivariate/Unadjusted Analysis	133
Appendix D: Overall Findings Summary Table	172

List of Charts, Graphs and Illustrations

Conceptual Model	8
Emotional Abuse Objective Severity Frequency	45
Physical Abuse Objective Severity Frequency	53
Neglect Objective Severity Frequency	56
Emotional Abuse Subjective Severity Frequency	76
Physical Abuse Subjective Severity Frequency	79
Neglect Subjective Severity Frequency	81

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Introduction

With a growing aging population, elder abuse (EA) is increasingly recognized as a public health crisis among policymakers, researchers and clinicians [White House Symposium, 2012]. EA refers to an intentional act or omission occurring in a relationship of trust, which causes harm or serious risk of harm to an older adult or deprives an older adult of basic needs. EA encompasses emotional, physical, sexual, and financial abuse or neglect towards an older adult with age-associated vulnerabilities [National Research Council (NRC), 2003; World Health Organization, 2008].

One-year EA incidence among community-dwelling, cognitively intact older adults in the United States (U.S.) is 7.6% - 11.4%. EA sub-types have one-year incidence as follows: physical/sexual abuse (1.6% - 2.2%), emotional abuse (1.6% - 4.6%), financial abuse (4.2% - 5.2%), and neglect (1.8% - 5.9%) (Acierno et al., 2010; Lachs & Berman, 2011; Laumann, Leitsch, & Waite, 2008). These rates likely under-estimate true EA incidence due a tendency among older adults to under-report abuse and neglect (Acierno, 2003). EA is associated with increased risks of pre-mature death (Lachs, Williams, O'Brien, Pillemer, & Charlson, 1998), hospitalization (Dong, Simon, & Evans, 2012), nursing home placement (Lachs, Williams, O'Brien, & Pillemer, 2002), financial ruin, chronic pain, psychological disturbance, and poor health (Fisher, Zink, & Regan, 2011). Despite research gains in defining the scope and consequences of EA, risk factors for this problem are misunderstood (Johannesen & LoGiudice, 2013).

Advancing EA risk factor knowledge is a research priority (NRC, 2003; Pillemer et al., 2011). Risk factors are conditions or characteristics that escalate the probability of abuse or neglect. Accurate risk factor knowledge precedes the development of effective screening,

prevention and intervention efforts. These EA areas have lacked progress over the past few decades relative to advances in other domains of interpersonal violence (Anthony, Lehning, Austin, & Peck, 2009; McDonald, 2011; Pillemer et al., 2011; Ploeg, Fear, Hutchison, MacMillan, & Bolan, 2009).

The EA risk factor literature is limited for several reasons. Many studies have relied on third-party caregivers, professionals or protective agency records to identify EA cases or have lacked a legitimate non-EA control group. Studies that contain a comparison group and collect data directly from older adults have been limited by one or more of the following: small sample, unrepresentative clinical/convenience sample, insufficient ethnic/racial diversity, low response rate, invalid inclusion criteria defining victims and perpetrators, unadjusted analytical methods, non-use of valid/reliable instruments to measure risk indicators or EA outcomes, and/or non-differentiation of EA sub-types (Johannesen & LoGiudice , 2013; NRC, 2003). Studies have largely focused on individual-level victim or perpetrator risk factors without adequate attention to the victim-perpetrator relationship, home environment, and environing sociocultural context (Goergen & Beaulieu, 2013; McDonald, 2011).

To date, the best EA risk factor data come from two population-based, cross-sectional studies drawing on large, random samples of older adults (Acierno et al., 2010; Laumann et al., 2008). These population-based studies found the following factors associated with one-year incidence of EA sub-types: *emotional/verbal abuse* (previous trauma, female gender, younger age, employment, higher education, functional impairment, low social support; *physical abuse* (younger age, low social support); *sexual abuse* (previous trauma, low social support); and *neglect* (minority racial status, low income, poor health, low social support). However, definitional parameters, inclusion criteria, and measurement strategies used in these studies

threatened EA construct validity and produced potentially misleading risk factor knowledge. Acierno et al. (2010) included stranger-perpetrated mistreatment that falls outside of EA boundaries defined by relationships of trust. Conversely, Laumann et al. (2008) only included family-perpetrated mistreatment, which excludes EA occurring in other relationships of trust. Laumann et al. (2008) also restricted sampling to adults aged 57 to 85, which excludes oldest-old adults living with the highest level of age-associated vulnerability. In both studies, samples were disproportionately represented by Caucasian older adults. Finally, these studies did not adapt validated instruments to measure EA outcomes or establish substantively meaningful cut-off criteria to define positive EA cases. Further population-based research using standard EA definitional parameters and adaptations of established measurement tools is required to advance the validity and reliability of EA risk factor knowledge (Johannesen & LoGiudice, 2013).

Consideration of problem severity, whether objectively or subjectively measured, is missing from the EA risk factor literature. Substantial variation exists in the extent, frequency, and self-perceived seriousness of EA (NRC, 2003; Fisher et al., 2011). Older adults enduring frequent or multiple forms of mistreatment behavior (objective severity) are more likely to experience poor health (Fisher et al., 2011), hospitalization (Dong et al., 2012), and all-cause mortality (Dong, Mendes de Leon, & Evans, 2009). Older adults who attach a low level of perceived seriousness to abuse or neglect (subjective severity) are less likely to seek formal support (Lee et al., 2011), pursue adult protective services (APS) (Burnes, Rizzo, Gorroochurn, Pollack, & Lachs, 2014), or achieve EA risk reduction over the course of protective interventions (Burnes**,** Rizzo, & Courtney, 2013). In a landmark EA report, experts recommended that in addition to understanding risk factors for the presence of EA in the general population, identifying factors associated with varying levels of problem severity among victims is a

research priority (NRC, 2003). A focus on EA severity would help identify victims at the highest risk for detrimental outcomes and inform the development of targeted interventions to ameliorate the magnitude of existing cases.

Using data from the most methodologically rigorous population-based EA study conducted to date – New York State Elder Abuse Prevalence Study (NYSEAPS) – this dissertation identified factors associated with EA incidence among community-dwelling, cognitively intact older adults, as well as factors associated with variation in EA severity. It examined potential risk factors at several ecological levels, including the individual victim, victim-perpetrator relationship, home living environment, and environing sociocultural context. For the first time, candidate risk factors were examined in a large, representative sample of older adults using accepted EA definitional parameters and inclusion criteria and adaptations of validated measurement instruments.

Theory

No single theory is capable of explaining the multiple facets and interpersonal dynamics of EA (Burnight & Mosqueda, 2011; McDonald, 2011). This dissertation was rooted in social exchange theory, situational demands theory, power and control theory, ecological theory, and symbolic interactionism. The dissertation model (see Figure 1, page 8) was loosely adapted from the EA theoretical framework proposed by the NRC (2003). Separate risk models for each form of abuse and neglect have not been developed in the literature. Therefore, the dissertation model depicts risk factors for undifferentiated EA. Given the substantive differences between EA sub-types, however, it is likely that risk factors vary across different forms of abuse and neglect. EA sub-types were analyzed separately in this dissertation with implications for future development of differentiated theoretical risk models[1].

Social exchange theory proposes that social interaction involves the exchange of rewards and punishments; people seek to maximize rewards and minimize punishments. According to this theory, social interactions operate under the law of distributive justice – rewards should be proportional to the costs incurred in obtaining them (Ansello, 1996). Mistreatment can occur when a social exchange becomes unbalanced and distributive justice fails. Social exchange explanations of EA assume that the mistreated older adult is more powerless, dependent and vulnerable than the trusted other. Using this theory, EA occurs when an older adult is dependent upon a trusted other who is not sufficiently rewarded for a high output of caregiving costs (Glendenning, 1993). Social exchange theory targets factors at individual and dyadic levels.

Situational demands theory focuses on situational and/or structural stressors that contribute to the likelihood of EA. According to this model, the probability of mistreatment

[1] Financial abuse data was not available for this dissertation. A low sample of sexual abuse cases prevented analysis on this EA sub-type.

increases when stressors increase for the abuser, particularly when the stress is seen as associated with the older adult (Glendenning, 1993). Variables linked to EA include characteristics of the older adult (e.g., functional dependence, poor health) and structural factors such as economic strain, social isolation, poor access to resources, or environmental problems. Situational demands theory targets potential risk factors at individual and sociocultural levels (Ansello, 1996).

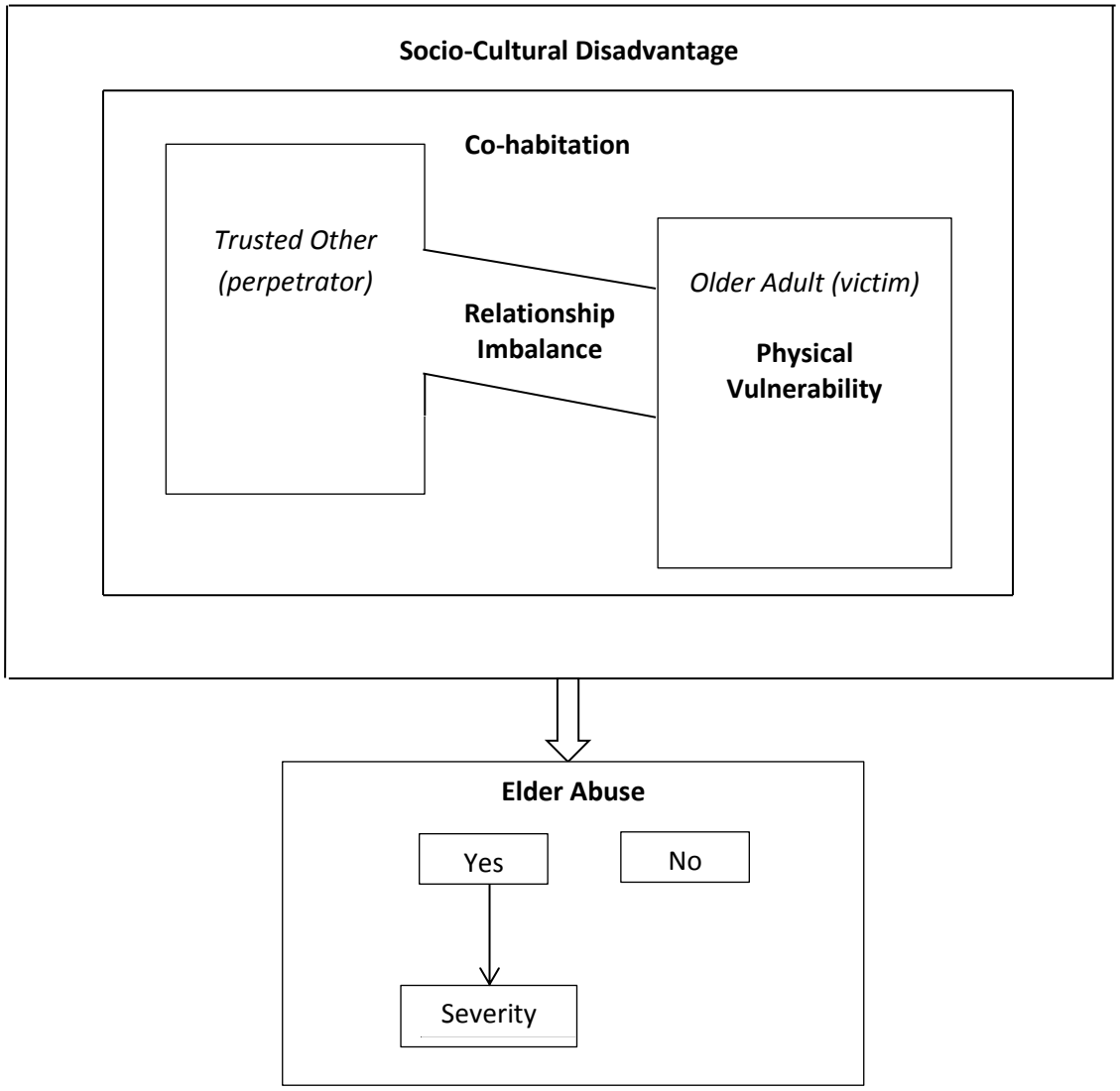
Power and control theory suggests that mistreatment stems from unequal, oppressive power relations. In the intimate partner violence literature, power and control theory is largely framed by a feminist perspective highlighting the power differential between men and women (Walker, 1990). A gendered power imbalance is applicable to EA, particularly given the long-standing, patriarchal power dynamics characterizing many relationships in older cohorts. Burnight and Mosqueda (2011) also identify a power differential between young and old. Ageism reflects the tendency to diminish or devalue people on the basis of age. A view of elders as unappealing, burdensome, or unworthy places them at risk for mistreatment. Finally, ability-related power dynamics are relevant to EA due to the high rate of age-associated functional impairment among older adults (Schiamberg & Gans, 1999). Ableism refers to the marginalization of people living with a disability in an able-body-centered world. Prejudiced attitudes towards older adults with functional impairment may place this group at higher risk of EA. Power and control theory targets potential risk factors at individual, relationship, and sociocultural levels.

Ecological models have gained recent momentum as a way to conceptualize EA risk (NRC, 2003; Parra-Cardona, Meyer, Schiamberg, & Post, 2007; Schiamberg & Gans, 2000). Researchers agree that single theories are either too narrow in scope or incapable of linking the multi-layered systems surrounding most EA situations (McDonald & Thomas, 2013). An

ecological perspective provides the capacity to capture risk factors at several levels of influence. The most commonly cited ecologically-based EA model is the untitled theoretical framework proposed by the NRC (2003). This model integrates factors from several ecological dimensions to understand EA risk, including the individual older adult (victim) or trusted other (perpetrator), victim-perpetrator relationship, surrounding social embeddedness, and broader sociocultural context.

Symbolic interactionism suggests that the subjective perception of the mistreatment situation is as important, if not more so, than the objective behaviors measured (Glendenning, 1993). According to this theory, individuals assign meaning to an encounter based on personal history, beliefs, self-image and current roles. These cognitive interpretations inform internal scripts, expectations, role allocation and planned behaviors related to the situation. The individual will behave in ways that are consistent with cognitively ascribed definitions (Ansello, 1996). Elders who define an abusive situation with a low level of seriousness, for example, will be less likely to pursue formal protective support (Burnes et al., 2014). Symbolic interactionism supports the importance of examining factors associated with subjective, self-perceived levels of EA severity.

Figure 1: Conceptual risk model for EA incidence and severity among community-dwelling, cognitively intact older adults



Literature Review

EA risk factor research is sub-divided into typologies based on community/institutional living and cognitively intact/impaired older adult populations. Institutional living and cognitive impairment scenarios represent conceptually distinctive sub-populations requiring specific methodological and theoretical considerations (Acierno, 2003; Burnight & Mosqueda, 2011). The following literature review focuses on EA risk for community-dwelling, cognitively intact older adults. It is limited to studies from the U.S., Canada, or United Kingdom that collected data directly from older adults and contained a non-EA comparison group. Differences in methodology (e.g., EA definitions, inclusion criteria, measurement strategies) limit inter-study comparisons. Indeed, risk factors change as the parameters defining EA change (Biggs, Manthorpe, Tinker, Doyle, & Erens, 2009), and experts recommend that future EA studies adhere to standard NRC definitions (Pillemer et al., 2011). The terms *potential* risk factors or *candidate* risk factors are used in this review due to the cross-sectional nature of available study designs in the literature.

Older Adult Physical Vulnerability

Older adult physical vulnerability is a critical, yet misunderstood, domain of EA risk (Johannesen & LoGiudice, 2013; Lachs & Pillemer, 2004). Social exchange, situational demands and power and control theories view physical vulnerability as an EA risk factor. Dominant EA discourse suggests that older adults with higher levels of functional or health dependence have diminished ability to defend themselves, seek help, or escape EA situations (NRC, 2003). Earlier EA research failed to find support for functional and health impairment-related risk, although studies were methodologically limited and did not investigate EA sub-types separately (NRC, 2003). Recent population-based EA research found functional impairment [e.g., requiring

assistance with activities of daily living (ADL) or instrumental activities of daily living (IADL)] as a candidate risk factor for emotional and financial abuse; poor self-reported health predicted neglect and financial abuse (Acierno et al., 2010; Laumann et al., 2008). These studies failed to employ standardized ADL/IADL measurement instruments and did not examine functional impairment as a potential risk factor for elder physical abuse or neglect. Further population-based research using standardized instruments is needed to clarify the potential differential role of functional impairment and poor health in relation to each EA type.

EA theory conceptualizes abuse and neglect as intrinsically connected to increased age-associated vulnerability (NRC, 2003). In contrast to theoretical expectations, population-based EA research has generally supported younger age as a potential risk factor. Acierno et al. (2010) found lower age as associated with elder emotional and physical abuse. Laumann et al. (2008) found lower age as predictive of emotional and financial abuse. However, these studies either excluded the oldest old (85+) (Laumann et al., 2008) or dichotomously operationalized age with a low cut-off (<75/≥75), which diluted any isolated effect of the oldest-old sub-group (Acierno et al., 2010). Research that samples older adults of all ages and isolates the risk effect of the oldest-old age group is required to reconcile differences between EA theory and existing empirical knowledge. Hypotheses in this dissertation reflected theoretical expectations given the methodological limitations threatening age-related findings in previous studies.

Victim-Perpetrator Relationship

EA occurs in a relationship between an older adult and trusted other. EA risk can be viewed, in part, as a function of various interacting victim and perpetrator characteristics. Relationship dynamics between these two individuals should be an essential feature of any EA risk analysis (Johannesen & LoGiudice, 2013). Despite the importance of victim-perpetrator

dynamics to EA, previous studies have not incorporated relationship-level factors into risk assessment. For this reason, theory informed the relationship-level hypotheses in this dissertation. EA theory proposes that relationship type (e.g., spouse, child, caregiver, etc.), status inequality (e.g., differences in gender, age, etc.), and power imbalance (e.g., level of functional dependence) predict greater EA likelihood and severity (NRC, 2003).

Cohabitation - General

A shared living arrangement, as opposed to living alone, is seen as a major EA risk factor (NRC, 2003). The assumption is that shared living provides greater, unhindered access to a potential victim, as well as greater opportunity for tension and escalation in mistreatment. Despite a strong rationale, limited evidence exists to support this risk factor. Pillemer and Finkelhor (1988) found that shared living was associated with elder physical abuse and undifferentiated EA. However, this study did not employ multivariate analysis to control for confounding variables and was based on lifetime physical abuse prevalence (since age 65), which introduced risk of recall bias. Lachs, Williams, O'Brien, Hurst, and Horwitz (1997) found living alone to be protective against undifferentiated EA; however, this study used agency records to identify EA cases, which are not representative of EA victims in the general population (Lachs & Berman, 2011). Recent population-based studies using random sampling did not examine general co-habitation status (Acierno et al., 2010; Laumann et al., 2008). Further population-based research is needed to confirm shared living as an EA risk factor in relation to different forms of EA (NRC, 2003).

Cohabitation - Detailed

The home living environment is particularly important to EA since older adults spend increasing amounts of time at home and are most likely to be victimized at home (Bachman &

Meloy, 2008). It is necessary to move beyond general co-habitation status (shared or alone) towards understanding how specific co-habitation dynamics contribute to EA risk. It is likely that some shared living arrangements carry higher risk than others. Does living alone always carry the least amount of EA risk? Do certain co-habitant relationship types contribute to risk? Does a shared living arrangement with the perpetrator contribute to intensification of EA severity? How does the presence of non-perpetrator co-habitants influence mistreatment severity? Researchers suspect that the presence of non-perpetrator others serves a protective, deterring and surveillance function to alleviate mistreatment (NRC, 2003); however, this relationship has not been empirically examined.

Understanding the effect of specific co-habitation dynamics on EA risk has direct implications for elder protective services. Manipulation of the home living arrangement represents a core intervention component of APS programs handling EA cases. Perpetrators are routinely evicted from the home or the older adult victim is re-located to live alone or with other family members. Yet, these intrusive living arrangement interventions are undertaken with very limited, contrasting empirical evidence. Pillemer and Finkelhor (1988) found that living with others, particularly a spouse and one other person, was associated with undifferentiated EA. Conversely, Beach, Schulz, Castle, and Rosen (2010) found that living with family members other than a spouse or child was associated with elder financial abuse since age 60. Using unadjusted, bivariate analysis, Podnieks (1992) found that living with a spouse or child was associated with verbal aggression, physical abuse, and neglect. None of these studies examined co-habitation dynamics in relation to EA severity. Given the dearth of strong research on detailed co-habitation dynamics, this dissertation took an exploratory position to understand the effect of specific shared living arrangements on each type of EA.

Socio-Cultural Characteristics

Individual, relationship-level, and home environment EA risk factors are embedded within socio-cultural structures. EA theory suggests that mistreatment risk is influenced by broader processes related to gender, race/ethnicity, socio-economic status, and urban/rural context (NRC, 2003). Situational demands and power and control theories propose that socio-cultural disadvantage contributes to EA risk through structural stressors or power imbalance in the victim-perpetrator relationship.

Empirical research has found mixed results regarding the effect of socio-cultural characteristics on EA risk (Johannesen & LoGiudice, 2013). Laumann et al. (2008) and Brozowski and Hall (2010) found older women to be at higher risk of emotional and physical/sexual abuse respectively. Pillemer and Finkelhor (1988), on the other hand, found older men to have higher odds of undifferentiated EA and physical abuse. Acierno et al. (2010) and Amstadter et al. (2011) found that minority racial/ethnic groups as a whole had higher odds of neglect compared to Caucasians. When operationalized according to disaggregated racial/ethnic groups, however, African-American older adults had increased risk of financial abuse and Latino elders had lower risk of both financial and emotional abuse (Laumann et al., 2008). Preliminary findings based on unadjusted analysis and unrepresentative clinical samples suggest that older adults with low income have increased risks of neglect and undifferentiated EA (Buri, Daly, Hartz, & Jogerst, 2006; Fulmer et al., 2005). Yet, older adults with higher levels of education show increased risk of abuse (Beach et al., 2010; Laumann et al., 2008). Brozowski and Hall (2004) found that rural living was associated with increased risk of emotional abuse, while Brozowski and Hall (2010) found urban living to be associated with increased risk of physical/sexual abuse. Further population-based research is required to clarify the differential

effect of socio-cultural characteristics on each EA type. Given the methodological limitations and contrasting socio-cultural findings in previous studies, hypotheses in this dissertation followed theoretical expectations that socio-cultural disadvantage contributes to EA risk.

EA Severity

EA research to date has not examined factors associated with objective or subjective measures of problem severity, despite the importance of this issue (NRC, 2003). The NRC theoretical risk framework indicates that factors associated with mistreatment behavior severity among victims are similar to those that predict EA incidence in the general population. For this reason, the dissertation model assumed that similar factors would predict both EA incidence and objective mistreatment severity. Neither empirical research nor theory is available to guide hypotheses on factors associated with subjective victim perceptions of EA severity. Therefore, this dissertation took a preliminary, exploratory position on risk factors for subjective severity without developing specific hypotheses.

Aims

This dissertation examined three EA types – emotional abuse, physical abuse, and neglect. Aims are organized around three outcomes: one-year incidence, objective severity, and subjective severity. Risk analyses began with a focus on older adult physical vulnerability, victim-perpetrator relationship dynamics, general co-habitation status, and socio-cultural characteristics, followed by more detailed exploration of cohabitation dynamics in the home.

Aim 1a: To identify factors in the general population associated with one-year incidence of emotional abuse, physical abuse and neglect among community-dwelling, cognitively intact older adults.

H_1: Older adults with higher levels of physical vulnerability (lower physical health, lower functional capacity, higher age), general cohabitation, (shared living arrangement, being married), and socio-cultural disadvantage (female, low income, below poverty line, low education, marginalized race/ethnicity, non-English language, geographical isolation) will be more likely to experience emotional abuse, physical abuse and neglect.

Aim 1b: To further explore home environment co-habitation dynamics (beyond general co-habitation status) associated with one-year incidence of elder emotional abuse, physical abuse, and neglect.

Exploratory Question 1: Which of the following detailed co-habitation dynamics are associated with one-year incidence of elder emotional abuse, physical abuse and neglect in the general population: number of co-habitants, number of co-habitants over age 60, level of family-member co-habitation, and co-habitant relationship type (spouse/partner, children, in-law children, grandchildren, other relatives, friends, paid attendant, other non-relatives)?

Aim 2a: To identify factors associated with the objective severity of emotional abuse, physical abuse and neglect among mistreated, community-dwelling, cognitively intact older adults.

H_2: Among older adults who have experienced some degree of EA, those with higher levels of physical vulnerability (lower physical health, lower functional capacity, higher age), relationship imbalance with the perpetrator (inter-generational difference, functional dependence), general cohabitation, (shared living arrangement, being married), and socio-cultural disadvantage (female, lower income, below poverty line, lower education, marginalized race/ethnicity, non-English language, geographical isolation) will experience more severe levels of emotional abuse, physical abuse and neglect.

Aim 2b: To further explore home environment co-habitation dynamics (beyond general co-habitation status) associated with the objective severity of emotional abuse, physical abuse and neglect.

Exploratory Question 2: Among older adults who have experienced some degree of EA, which of the following detailed co-habitation dynamics are associated with the objective severity of emotional abuse, physical abuse, and neglect: number of co-habitants, number of co-habitants over age 60, level of family-member co-habitation, level of perpetrator co-habitation, level of non-perpetrator co-habitation, and co-habitant relationship type (spouse/partner, children, in-law children, grandchildren, other relatives, friends, paid attendant, other non-relatives)?

Aim 3a: To explore factors associated with the subjective severity of emotional abuse, physical abuse and neglect among mistreated, community-dwelling, cognitively intact older adults.

Exploratory Question 3a: Among older adults who have experienced EA, which victim physical vulnerability (physical health, functional capacity, age), victim-perpetrator

relationship (relationship type, victim dependence on perpetrator), general co-habitation (living arrangement, marital status), and socio-cultural (gender, socio-economic status, education, race/ethnicity, English language ability, urban/rural context) factors are associated with the victim's subjective perception of severity of emotional abuse, physical abuse and neglect?

Aim 3b: To further explore home environment co-habitation dynamics (beyond general co-habitation status) associated with the subjective severity of emotional abuse, physical abuse and neglect.

Exploratory Question 3b: Among older adults who have experienced EA, which of the following detailed co-habitation dynamics are associated with the victim's subjective perception of severity of emotional abuse, physical abuse, and neglect: number of co-habitants, number of co-habitants over age 60, level of family-member co-habitation, level of perpetrator co-habitation, level of non-perpetrator co-habitation, and co-habitant relationship type (spouse/partner, children, in-law children, grandchildren, other relatives, friends, paid attendant, other non-relatives).

Design and Methods

Data

Data came from the NYSEAPS. The NYSEAPS was conducted in 2009 to estimate EA prevalence and incidence in New York State (NYS). The NYSEAPS used a random digit dialing sampling strategy derived from census tracts to conduct direct telephone interviews with a representative sample (n = 4156) of NYS older adults. Participant inclusion criteria were: 1) age ≥ 60 years; 2) English or Spanish speaking; 3) community-dwelling (e.g., not institutional settings); and 4) cognitively intact as defined by a modified version of the Abbreviated Mental Test (Swain & Nightingale, 1997). One hundred and fifty six interviews were conducted via a close proxy in cases when an older adult had physical or communication barriers preventing direct interviewing. Black and Hispanic older adults, as well as those aged 80 years or older, were oversampled to ensure representation within these groups. The NYSEAPS yielded an overall response rate of 75.2%.

The Cornell Survey Research Institute (CSRI) conducted telephone interviews. CSRI interviewers were diverse in age, gender and racial/ethnic background. Prior to commencing data collection, interviewers were trained about EA and how to address potential situations in which an older adult was in immediate danger. The NYSEAPS principal investigator, a leading EA expert and geriatric physician, was available on-call throughout the data collection process to assist interviewers and/or older adult respondents with any urgent clinical issues. No such urgent situation occurred during the telephone interviews. All respondents were also provided with a toll-free violence and abuse counselling hotline in case they wanted to address concerns related to topics discussed during the interview. Interview lengths ranged from six to 66 minutes across respondents with a mean of 10 minutes. The Weill Cornell Medical College Institutional Review

Board approved the study. Secondary data analysis for the present dissertation was waived by the Columbia University Institutional Review Board.

Dependent Variables

Consistent with NRC (2003) recommendations to advance EA research, the NYSEAPS survey instrument adapted well-established scales to measure abuse and neglect outcomes. Elder emotional and physical abuse types were assessed using a modified version of the Conflict Tactics Scale (CTS) (Pillemer & Finkelhor, 1988; Wolf & Pillemer, 2000). The CTS scope was expanded to inquire about mistreatment occurring in trust relationships beyond the family context. Elder neglect was measured using a modified version of the Duke Older Americans Resources and Services (OARS) IADL and ADL scales (Fillenbaum & Smyer, 1981). Both the CTS and DUKE OARS scales were modified by adding a rating of frequency and self-perceived seriousness onto each item. For each item, older adult respondents were asked if they had experienced the mistreatment behavior since age 60. Upon endorsing an item, respondents were asked how many times the behavior occurred in the past year (frequency) and how serious a problem it was for them (self-perceived seriousness). Frequency response categories were as follows: none, once, two to ten times, or more than ten times. Self-perceived seriousness was operationalized according to three ordinal responses: not serious, somewhat serious, or very serious. In accordance with NRC (2003) measurement recommendations, CTS and DUKE OARS scales measured each EA type with multiple, behaviorally-defined items describing specific mistreatment events. Appendix A lists the NYSEAPS instrument items used to assess elder emotional abuse, physical abuse, and neglect.

One-Year Incidence

One-year incidence was measured dichotomously (yes/no) as the presence or absence of emotional abuse, physical abuse or neglect in the past year. Cut-off criteria were used to specify positive EA cases. Emotional abuse was deemed positive if: 1) the spite (EA1) or insulting/swearing (EA2) CTS items were endorsed with a frequency of greater than 10 times *and* rated as "very serious" by the respondent; or 2) the threat to hit/throw (EA3) CTS item was endorsed with any level of frequency or perceived seriousness. Physical abuse was deemed positive if any of the 11 CTS items pertaining to this abuse type (PA1 to PA11) were endorsed, regardless of frequency or level of perceived seriousness. Neglect was deemed positive if any of the 11 DUKE OARS ADL/IADL needs (N1 to N11) were unmet by a responsible caregiver at least two to ten times in the past year or the respondent described the neglected care as being "somewhat" or "very" serious. Cut-off criteria were adapted from parameters established in a two-stage consensus process to define substantively meaningful EA, which involved experienced EA researchers and clinicians (Lachs & Berman, 2011). Cut-off criteria minimizes the risk of type I error – identifying cases as positive that do not belong under the characterization of EA (e.g., grandchild insulting an older adult once in the past year, caregiver forgetting to clean the house or take the older adult shopping once in the past year).

Objective Severity

The objective severity of each EA type was measured as a continuous outcome. Calculation of the objective severity score was adopted from scoring systems used for the CTS (Strauss, 1995) and the Assessment of Self-Neglect Severity Scale (Dong et al., 2009; Dong et al., 2012). For each EA type, objective severity was calculated as the summation of frequencies across endorsed mistreatment items. Thus, the objective severity outcome captured both the

number of different mistreatment items endorsed as well as the frequency of each item. Frequency response categories were scored as follows: none = 0; once = 1; 2 to 10 times = 6, and more than 10 times = 15 (Strauss, Hamby, McCoy, & Sugarman, 1996).

The NYSEAPS instrument assessed elder physical abuse using 11 CTS mistreatment items (PA1 to PA11). Thus, physical abuse objective severity was calculated by summing frequency scores across these 11 items, which allowed for total scores ranging from 0 to 165. Emotional abuse was assessed with three CTS mistreatment items (EA1 to EA3), which allowed for emotional abuse objective severity scores ranging from 0 to 45. Elder neglect was assessed using 11 DUKE OARS ADL/IADL items (N1 to N11), which allowed for neglect objective severity scores ranging from 0 to 165. For each EA type, objective severity was examined only among the sub-sample of older adults who reported at least one mistreatment item since age 60. In other words, objective severity analysis excluded older adults with no history of EA (Strauss et al., 1996). Zero scores represented older adults reporting an EA item since age 60 but an absence of abuse or neglect in the past year. Higher scores indicated increasingly severe forms of EA in the past year. This approach captured the full spectrum of objective severity variation.

Subjective Severity

Subjective EA severity was operationalized as an ordinal outcome delineated by levels of self-perceived seriousness. Older adults were asked to assign one of the following levels of self-perceived seriousness to each endorsed mistreatment item that occurred in the past year: not serious, somewhat serious, or very serious. For each EA type, level of subjective severity was determined by the item in that abuse or neglect category with the highest level of assigned seriousness. For example, if an older adult assigned two physical abuse items as “somewhat serious” and one physical abuse item as “very serious”, then the subjective physical abuse

severity for this respondent was scored using the highest (very) level of seriousness. To minimize the effect of recall bias and to ensure that subjective severity was analyzed in relation to an actual EA problem, subjective severity was examined only among older adults who experienced EA in the past year and met the substantively meaningful cut-off criteria for one-year incidence. Since one-year incidence cut-off criteria for the emotional abuse EA1 (spite) and EA2 (insult/swear) items were dependent upon a self-perceived rating of "very serious", it was necessary to remove this criterion to enable variation in subjective severity on these two items.

Independent Variables

This dissertation examined candidate risk factors attached to older adult physical vulnerability, victim-perpetrator relationship dynamics, general co-habitation status, and socio-cultural characteristics, as well as more detailed cohabitation dynamics in the home.

Older adult physical vulnerability was assessed by level of functional capacity, self-reported health status, and age. Functional capacity was measured continuously as the number of DUKE OARS ADL/IADL tasks (0 to 11) that could be accomplished independently. Higher scores indicated greater functional independence. It was also measured as an ordinal variable (no limitations, one limitation, two or more limitations) to enable separate comparisons between older adults with no functional impairment to those with different levels of impairment. Similar to previous population-based EA studies (Acierno et al., 2010; Amstadter et al., 2011; Laumann et al., 2008), levels of self-reported health status were collapsed and measured dichotomously as poor (very poor/poor/fair) or good (good/very good/excellent). Age was considered both continuously (60 to 101) and as a three-level ordinal variable to isolate potential risk attached to the oldest-old group (60 to 69, 70 to 84, 85+).

Victim-perpetrator relationship dynamics were assessed by the type of perpetrator relation to the victim (spouse, adult child, in-law child, grandchild, other relative, neighbor, friend, other non-relative, or paid attendant) and whether or not the victim was functionally dependent upon the perpetrator for ADL/IADL needs (yes, no). Victim dependence on the perpetrator was based on matching perpetrator relationship type with the relation of the person assisting the victim with ADL/IADLs.

General co-habitation status was assessed according to the older adult's living arrangement and marital status. General living arrangement was operationalized by whether an older adult lived alone or in a shared arrangement. Marital status was measured as a three-level nominal variable (married/partnered, separated/divorced/, other).

Socio-cultural characteristics included older adult gender, household income, poverty status, education level, race/ethnicity, and geographical context. Household income was measured continuously (1 to 9, where 1 = under $10,000; 2 = $10,000 to under $20,000; 3 = $20,000 to under $30,000; 4 = $30,000 to under $40,000; 5 = $40,000 to under $50,000; 6 = $50,000 to under $75,000; 7 = $75,000 to under $100,000; 8 = $100,000 to under $150,000; and 9 = $150,000+). To enable inter-study comparisons, household income was also measured dichotomously with a similar cut-off to other population-based EA studies (<$30,000, ≥$30,000) (Acierno et al., 2010; Amstadter et al., 2011). Household income level was incorporated with information on household size to calculate whether or not respondents lived below the poverty line according to the 2009 U.S. Census Bureau (U.S. Census Bureau, 2009). Education was measured as a four-level ordinal variable (< high-school, high-school, college, post-graduate). Race/ethnicity was operationalized as a four-level nominal variable (Caucasian, African-American, Hispanic, other). Sample size restrictions did not allow disaggregated analysis on

American Indian, Aleut, Eskimo, Asian or Pacific Islander racial/ethnic groups. Geographical context was defined by urban, suburban, or rural environment, as determined by guidelines set forth by the NYS Office of Mental Health.

Detailed co-habitation dynamic factors went beyond general co-habitation status to include the following: number of co-habitants (continuous), number of co-habitants over age 60 (continuous), level of family co-habitation (lives alone, lives with family only, lives with family and non-family, lives with non-family only), general perpetrator co-habitation (yes, no), general non-perpetrator co-habitation (yes, no), specified perpetrator/non-perpetrator co-habitation (lives alone, lives with perpetrator only, lives with perpetrator and non-perpetrator others, lives with non-perpetrator others only), and co-habitant relationship type (spouse/partner, children, in-law children, grandchildren, other relatives, friends, paid attendant, other non-relatives).

Proxy status (proxy not used, proxy used) was controlled for in analyses when differences between proxy and non-proxy interviews were detected. Objective severity score was controlled for when predicting older adult subjective severity EA perceptions.

Analytic Plan

For each outcome (one-year incidence, objective severity, subjective severity), analyses followed a similar approach. Descriptive, univariate statistics (frequency distributions, mean, standard deviation) were conducted on all independent and outcome variables. Bivariate tests (chi-square, t-test) determined if differences existed between proxy and non-proxy interviews and, consequently, whether proxy status should be controlled for in multivariate analysis. Both bivariate tests (chi-square, t-tests, one-way ANOVA) and unadjusted regression analyses were conducted to explore individual, preliminary relationships between independent and outcome variables.

A small number of positive EA cases in the general population and the small sub-samples used in objective and subjective severity analyses limited the number of independent variables that could be loaded simultaneously into multivariate regression models. To avoid model instability, select variables were collapsed or removed from adjusted analyses. Selection of independent variables into multivariate models was based on both statistical and theoretical bases, including significance level in bivariate/unadjusted analysis ($p < 0.05$), tolerance and variance inflation factor (VIF) diagnostics, prior literature, and to ensure representation across each of the dissertation conceptual model dimensions.

Logistic regression was used to model one-year incidence. Ordinary least squares (OLS) regression was initially employed to predict the continuous objective severity outcome. However, for each EA type, the objective severity outcome distribution violated fundamental assumptions of normality underlying the parametric OLS approach. Therefore, the continuous objective severity outcome was converted into an ordinal outcome with cut-off points. The number of cut-off points was determined by the sub-sample size for each EA type. Sub-samples for physical abuse ($n = 89$) and neglect ($n = 109$) were small; thus, a dichotomous (low/high) objective severity outcome operationalization was used to avoid model instability. Accordingly, logistic regression was used to model objective physical abuse and neglect severity. The emotional abuse objective severity sub-sample ($n = 509$) was large enough to facilitate the four distinct cut-off points that emerged in the data distribution. Ordinal logistic regression was initially used to predict emotional abuse objective severity; however, the final model violated the parallel lines test of proportional odds. For this reason, a less restrictive multinomial logistic regression approach was used to predict emotional abuse objective severity. Finally, ordinal logistic regression was used to predict the ordinal subjective severity outcome across each EA

type, which satisfied the parallel lines test. Missing data was managed with a fully conditional specification multiple imputation method using ten pooled data sets.

The detailed co-habitation dynamic analyses (aims 1b, 2b, and 3b) involved a highly correlated set of independent variables. To examine these detailed co-habitation independent variables in a multivariate context without introducing risk of multicollinearity, variables reaching bivariate/unadjusted significance ($p < 0.05$) were substituted into the final models from aims 1a, 2a, and 3a respectively. This approach enabled multivariate examination of relevant detailed co-habitation factors while controlling for the physical vulnerability, victim-perpetrator relationship, and socio-cultural characteristics of known importance.

In the NYSEAPS, neglect was defined as unmet needs by a responsible caregiver in regards to ADLs and IADLs. Therefore, neglect analyses were limited to older adults in the sample with one or more ADL/IADL limitations. Older adults without any ADL/IADL limitations were not susceptible to the issue of neglect. Analyses on emotional and physical abuse were open to the entire sample since all older adults were susceptible to these problems.

Power Analysis

For logistic regression analyses on one-year EA incidence in the general population, a sample size of 1012 was required to achieve 80% power at the 0.05 significance level. Logistic regression analyses on EA objective severity among older adults with some level of abuse or neglect required a sample of 63 to achieve 80% power at the 0.05 significance level. Power analysis does not exist in relation to multinomial or ordinal regression techniques. However, since more than enough power was available for the given sample sizes in the case of logistic regression, we can safely assume that power was adequate for both multinomial and ordinal regressions.

Results

Sample Characteristics

Table 1 provides a description of the overall study sample (n = 4156). Representative of the NYS general population of adults aged 60 or above, the sample was mostly female and Caucasian. Respondents had a mean age of 74.1 (SD = 8.66) and mostly fell within the "middle" old age group of 70 to 84. Over half of the respondents had attained education beyond high-school. The mean household income category was $30,000 to $40,000. Most respondents lived in an urban geographical context. The sample mostly consisted of older adults with functional ADL/IADL independence and good health status. Almost half of the sample were married or partnered and the majority of older adults lived in a shared arrangement. A small minority of older adults were represented by a proxy interview due to physical or communication barriers.

Table1: General sample characteristics (n = 4156)

Characteristic	n (%)
Gender	
Male	1476 (35.51)
Female	2680 (64.48)
Ethnicity	
Caucasian	3005 (72.31)
African-American	757 (18.21)
Hispanic	250 (6.01)
Other	107 (2.57)
Education	
Less than high-school	514 (12.37)
High school	1290 (31.04)
College	1662 (40.00)
Post-graduate	664 (15.98)
Household income (mean/SD)	4.49 (2.06)
Household income	
Below $30,000	1370 (32.96)
$30,000 or above	2452 (59.00)
Below Poverty Line	
No	3883 (93.43)
Yes	273 (6.57)
Primary Language	
English	4088 (98.36)

Spanish	68 (1.64)
Geographical context	
Urban	2395 (57.63)
Suburban	1117 (26.88)
Rural	635 (15.71)
Functional Capacity (mean/SD)	9.59 (1.23)
Functional Capacity	
No limitations	3451 (83.04)
One limitation	287 (6.91)
≥ Two limitations	414 (9.96)
Health	
Poor (very poor, poor, fair)	1029 (24.76)
Good (good, very good, excellent)	3124 (75.17)
Age (mean/SD)	74.13 (8.66)
Age	
60 – 69	1442 (34.70)
70 – 84	2134 (51.35)
85+	580 (13.96)
Marital Status	
Married/partnered	1958 (47.11)
Separated/divorced	515 (12.39)
Other (widowed/single)	1671 (40.21)
Shared Living Arrangement	
No	1573 (37.85)
Yes	2555 (61.48)
Interviewed by proxy	
No	4000 (96.25)
Yes	156 (3.75)

One-Year Incidence – Aim 1a: To identify factors in the general population associated with one-year incidence of emotional abuse, physical abuse and neglect among community-dwelling, cognitively intact older adults.

H_1: Older adults with higher levels of physical vulnerability (lower physical health, lower functional capacity, higher age), general cohabitation, (shared living arrangement, being married), and socio-cultural disadvantage (female, low income, below poverty line, low education, marginalized race/ethnicity, non-English language, geographical isolation) will be more likely to experience emotional abuse, physical abuse and neglect.

Emotional Abuse

One-year incidence of elder emotional abuse among community-dwelling, cognitively intact older adults was 1.87% (n = 77).

Table 2 (Appendix B, p. 125) provides results from the bivariate analysis to determine if differences existed between proxy and non-proxy interviews. Older adults represented by proxy interviews were more likely to be functionally impaired, have poorer health, older, living below the poverty line, living in a shared arrangement, have poorer education, and be of American Indian, Aleut, Eskimo, Asian or Pacific Islander background. Given these significant differences, proxy status was controlled for in subsequent multivariate analysis.

Table 3 (Appendix C, p. 133) shows results from the bivariate tests and unadjusted logistic regression models exploring preliminary, individual relationships between independent variables and one-year emotional abuse incidence. Functional capacity, age, marital status, household income, poverty status, education, and geographical context were significantly related to one-year emotional abuse incidence.

Independent variables reaching significance in bivariate/unadjusted analysis were loaded simultaneously into a final multivariate logistic regression model predicting one-year elder emotional abuse incidence. This group of independent variables satisfied representation across each of the dissertation conceptual model dimensions. Collectively, these independent variables had tolerance of 0.80 or above, VIF of 1.25 or below, and correlations ranging in absolute value from 0.01 to 0.37, indicating no concern of multicollinearity. Table 4 shows results of the final multivariate logistic regression model predicting one-year elder emotional abuse incidence.

Table 4: Multivariate logistic regression model predicting one-year emotional abuse incidence

Sample (n = 4156)

	Adjusted Logistic Regression	
Variables	OR (95% CI)	P-Value
Physical Vulnerability		
Functional Capacity	0.84 (0.73 – 0.97)*	0.017
Age		
60 to 69	-	-
70 to 84	0.60 (0.37 – 0.98)*	0.042
85+	0.32 (0.13 – 0.80)*	0.016
General Co-Habitation		
Marital Status		
Married/partnered	-	-
Separated/divorced	2.69 (1.45 – 4.99)**	0.002
Other (widow/single)	1.63 (0.92 – 2.87)†	0.094
Socio-Cultural		
Education		
Less than high-school	0.37 (0.14 – 0.97)*	0.042
High-school	0.43 (0.20 – 0.92)*	0.029
College (complete/some)	0.86 (0.46 – 1.60)	0.63
Post-graduate	-	-
Household Income		
< $30,000	1.69 (1.00 – 2.87)*	0.05
≥ $30,000	-	-
Geo-Context		
Urban	-	-
Suburban	0.60 (0.32 – 1.12)	0.11
Rural	0.75 (0.38 – 1.49)	0.41
Control		
Proxy Interview		
No	-	-
Yes	1.58 (0.53 – 4.66)	0.41

CI: Confidence Interval; *p ≤ 0.05, **p < 0.01, ***p < 0.001, †p < 0.10 (borderline).
Notes: The continuous functional capacity variable was used instead of the three-level ordinal variable since the former reached a greater significance level in bivariate analysis. The three-level ordinal age variable was used instead of the continuous variable since the former builds on the literature by isolating the oldest-old age group. The binary household income variable (<$30,000/≥$30,000) was used instead of poverty status to allow for inter-study comparison with other large EA risk studies. The final model satisfied both the Omnibus Test of Model Coefficients ($p < 0.01$) and the Hosmer-Lemeshow Test ($p > 0.05$).

Older adults with higher levels of functional capacity/independence had significantly lower odds [Odds Ratio (OR): 0.84, 95% Confidence Interval (CI): 0.73 – 0.97] of emotional

abuse in the past year. Compared to adults in the youngest-old age group, those in the middle (OR: 0.60, CI: 0.37 – 0.98) and oldest (OR: 0.32, CI: 0.13 – 0.80) age groups had significantly lower odds of emotional abuse. Older adults who were separated or divorced had significantly higher odds (OR: 2.69, CI: 1.45 – 4.99) of emotional abuse compared to married/partnered older adults. Compared to elders with the highest level of education (post-graduate), those with the lowest levels of education – less than high-school (OR: 0.37, CI: 0.14 – 0.97) and high-school (OR: 0.43, CI: 0.20 – 0.92) – had significantly lower odds of emotional abuse. Finally, older adults living in households with income below $30,000 had significantly higher odds (OR: 1.69, CI: 1.00 – 2.87) of experiencing emotional abuse in the past year.

Physical Abuse

One-year incidence of elder physical abuse among community-dwelling, cognitively intact older adults was 1.83% (n = 76).

Table 5 (Appendix C, p. 135) shows results from the bivariate tests and unadjusted logistic regression models exploring preliminary relationships between independent variables and one-year physical abuse incidence. The following independent variables were significantly related to physical abuse incidence: functional capacity, age, marital status, household income, education, and geographical context.

Independent variables reaching significance in bivariate/unadjusted analysis were loaded simultaneously into a final multivariate logistic regression model predicting one-year physical abuse incidence. Ethnicity was also included in the final model since it reached strong borderline significance (p = 0.065). This group of independent variables satisfied representation across each of the conceptual model dimensions. Collectively, these independent variables had tolerance of 0.78 or above, VIF of 1.29 or below, and correlations ranging in absolute value from 0.002 to

0.37, which indicated no concern of multicollinearity. Table 6 shows results of the final multivariate logistic regression model predicting one-year elder physical abuse incidence.

Table 6: Multivariate logistic regression model predicting one-year physical abuse incidence

	Sample (n = 4156)	
	Adjusted Logistic Regression	
Variables	OR (95% CI)	P-Value
Physical Vulnerability		
Functional Capacity	0.85 (0.74 – 0.99)*	0.035
Age		
60 to 69	-	-
70 to 84	0.37 (0.22 – 0.62)***	< 0.001
85+	0.46 (0.21 – 1.0)*	0.049
General Co-Habitation		
Marital Status		
Married/partnered	-	-
Separated/divorced	1.95 (1.04 – 3.67)*	0.038
Other (widow/single)	1.42 (0.81 – 2.50)	0.23
Socio-Cultural		
Ethnicity		
Caucasian	-	
African-American	1.38 (0.77 – 2.47)	0.27
Hispanic	0.75 (0.25 – 2.21)	0.60
Other	1.27 (0.38 – 4.29)	0.70
Education		
Less than high-school	0.24 (0.10 – 0.58)**	0.002
High school	0.25 (0.12 – 0.50)***	< 0.001
College (some/complete)	0.33 (0.18 – 0.59)***	< 0.001
Post-graduate	-	-
Household Income		
Below $30,000	2.15 (1.24 – 3.75)**	0.007
$30,000 or above	-	-
Geographic Context		
Urban	-	-
Suburban	0.58 (0.30 – 1.11)†	0.097
Rural	0.81 (0.39 – 1.68)	0.57
Control		
Proxy Interview	1.80 (0.62 – 5.27)	0.28

CI: Confidence Interval; *p ≤ 0.05, **p < 0.01, ***p < 0.001, †p < 0.10 (borderline).
Notes: The continuous functional capacity variable was used instead of the three-level ordinal variable since the former captures full variation of this factor and remains consistent with analysis for emotional abuse incidence. The three-level ordinal age variable was used instead of the continuous variable since the former builds on the literature by isolating the oldest-old age group. The binary household income variable (<$30,000/≥$30,000) was used instead of the

continuous variable to enable inter-study comparison with other large EA risk studies. The final model satisfied both the Omnibus Test of Model Coefficients ($p < 0.01$) and the Hosmer-Lemeshow Test ($p > 0.05$).

Older adults with higher levels of functional capacity/independence had significantly lower odds [OR: 0.85, CI: 0.74 – 0.99] of physical abuse in the past year. Compared to adults in the youngest-old age group, those in the middle (OR: 0.37, CI: 0.22 – 0.62) and oldest (OR: 0.46, CI: 0.21 – 1.00) age groups had significantly lower odds of physical abuse. Older adults who were separated or divorced had significantly higher odds (OR: 1.95, CI: 1.04 – 3.67) of physical abuse compared to older adults who were married or partnered. Compared to older adults with the highest level of education (post-graduate), those with lower levels of education – less than high-school (OR: 0.24, CI: 0.10 – 0.58), high-school (OR: 0.25, CI: 0.12 – 0.50), and college (OR: 0.33, CI: 0.18 – 0.59) – had significantly lower odds of physical abuse. Finally, older adults living in households with income lower than $30,000 had significantly higher odds (OR: 2.15, CI: 1.24 – 3.75) of experiencing physical abuse in the past year.

Neglect

A sub-sample of 701 respondents reported at least one ADL or IADL limitation, which represented the universe of older adults susceptible to elder neglect. Within this sub-sample of community-dwelling, cognitively intact older adults, one-year incidence of elder neglect was 10.78% (n = 75).

With a new sub-sample for analysis, Table 7 (Appendix B, p. 126) shows the results on proxy/non-proxy interview differences. Older adults represented by proxy interviews were more likely to be functionally impaired, older, live below the poverty line, live in a shared arrangement, and be of American Indian, Aleut, Eskimo, Asian or Pacific Islander background. Given these differences, proxy status was controlled for in subsequent multivariate analysis.

Table 8 (Appendix C, p. 137) shows results from the bivariate tests and unadjusted logistic regression models exploring preliminary relationships between independent variables and one-year neglect incidence. Health status, age, marital status, ethnicity, poverty status, and geographical context were significantly related to neglect in the past year.

Independent variables reaching significance in bivariate/unadjusted analysis were loaded simultaneously into a final multivariate logistic regression model to predict one-year elder neglect incidence. Functional capacity was also included in the final model since it reached high borderline significance ($p = 0.058$) and is central to the issue of neglect. This group of independent variables satisfied representation across each of the conceptual model dimensions. Collectively, these independent variables had tolerance of 0.71 or above, VIF of 1.42 or below, and correlations ranging in absolute value from 0.002 to 0.47, which indicated no concern of multicollinearity. Table 9 shows results of the final multivariate logistic regression model predicting one-year elder neglect incidence.

Table 9: Multivariate logistic regression model predicting one-year neglect incidence

	Sample (n = 701)	
	Adjusted Logistic Regression	
Variables	OR (95% CI)	P-Value
Physical Vulnerability		
Functional Capacity		
One limitation	-	-
Two limitations	1.30 (0.67 – 2.54)	0.44
Three or more limitations	1.48 (0.77 – 2.84)	0.24
Health		
Poor	2.03 (1.13 – 3.63)*	0.017
Good	-	-
Age		
60 to 69	-	-
70 to 84	0.56 (0.31 – 1.03)†	0.062
85 or older	0.24 (0.10 – 0.57)**	0.001
General Co-Habitation		
Marital Status		
Married/partnered	-	-
Widowed/single	0.93 (0.51 – 1.72)	0.83
Separated/divorced	2.29 (1.10 – 4.79)*	0.027
Socio-Cultural		
Ethnicity		
Caucasian	-	-
African-American	1.01 (0.54 – 1.91)	0.97
Hispanic	0.16 (0.04 – 0.76)*	0.021
Other	2.08 (0.72 – 6.01)	0.18
Poverty line		
No	-	-
Yes	2.15 (1.14 – 4.06)*	0.019
Geo-context		
Rural	-	-
Urban	1.98 (0.71 – 5.49)	0.19
Suburban	3.28 (1.16 – 9.27)*	0.025
Control		
Proxy interview		
No	-	-
Yes	1.36 (0.63 – 2.93)	0.43

CI: Confidence Interval; *$p \leq 0.05$, **$p < 0.01$, ***$p < 0.001$, †$p < 0.10$ (borderline).
Notes: The three-level ordinal functional capacity variable was used instead of the continuous variable since the former reached borderline significance while the latter did not. The three-level ordinal age variable was used instead of the continuous variable since the former builds on the literature by isolating the oldest-old age group. The final model satisfied both the Omnibus Test of Model Coefficients ($p < 0.01$) and the Hosmer-Lemeshow Test ($p > 0.05$).

Compared to older adults with "good" self-rated health, those with "poor" health had significantly higher odds (OR: 2.03, CI: 1.13 – 3.63) of experiencing elder neglect in the past year. Compared to adults in the youngest-old age group, those in the middle-old age group had borderline significantly lower odds (OR: 0.56, CI: 0.31 – 1.03) and those in the oldest-old age group had significantly lower odds (OR: 0.24, CI: 0.10 – 0.57) of neglect. Older adults who were separated or divorced had significantly higher odds (OR: 2.29, CI: 1.10 – 4.79) of neglect compared to older adults who were married or partnered. Compared to Caucasian older adults, adults of Hispanic origin had significantly lower odds (OR: 0.16, CI: 0.04 – 0.76) of neglect. Older adults living below the poverty line had significantly higher odds (OR: 2.15, CI: 1.14 – 4.06) of neglect. Compared to older adults living in a rural context, those who lived in a suburban area had significantly higher odds (OR: 3.28, CI: 1.16 – 9.27) of neglect.

One-Year Incidence – Aim 1b: To further explore home environment co-habitation dynamics (beyond general co-habitation status) associated with one-year incidence of elder emotional abuse, physical abuse, and neglect.

> **Exploratory Question 1**: Which of the following detailed co-habitation dynamics are associated with one-year incidence of elder emotional abuse, physical abuse and neglect in the general population: number of co-habitants, number of co-habitants over age 60, level of family-member co-habitation, and co-habitant relationship type (spouse/partner, children, in-law children, grandchildren, other relatives, friends, paid attendant, other non-relatives)?

Emotional Abuse

Table 10 (Appendix C, p. 139) shows results from the bivariate tests and unadjusted logistic regression models exploring preliminary relationships between individual detailed cohabitation dynamic independent variables and one-year emotional abuse incidence. Co-

habitation with a spouse/partner or other non-relative (e.g., ex-spouse, tenant, roommate) was significantly related to emotional abuse in the past year.

Loading detailed co-habitation independent variables simultaneously into a multivariate model would introduce risk of multicollinearity. Thus, aforementioned co-habitation variables reaching significance in bivariate/unadjusted analysis were separately entered into the final multivariate logistic regression model predicting one-year emotional abuse incidence above (Table 4), substituting the general co-habitation status independent variable. Results of multivariate analyses examining the effects of spousal/partner co-habitation and co-habitation with other non-relatives on one-year emotional abuse incidence are shown in Tables 11 and 12 respectively.

Table 11: Multivariate logistic regression model testing the effect of spousal co-habitation on one-year emotional abuse incidence

	Sample (n = 4156)	
	Adjusted Logistic Regression	
Variables	OR (95% CI)	P-Value
Physical Vulnerability		
Functional Capacity	0.84 (0.73 – 0.97)*	0.017
Age		
60 to 69	-	-
70 to 84	0.56 (0.34 – 0.90)*	0.018
85+	0.27 (0.11 – 0.66)**	0.005
Detailed Co-Habitation		
Lives With Spouse/Partner		
No	**-**	**-**
Yes	**0.45 (0.26 – 0.77)****	**0.004**
Socio-Cultural		
Education		
Less than high-school	0.36 (0.14 – 0.94)*	0.036
High-school	0.40 (0.19 – 0.86)*	0.018
College (complete/some)	0.83 (0.44 – 1.55)	0.56
Post-graduate	-	-
Household Income		
< $30,000	-	-
≥ $30,000	0.61 (0.36 – 1.03)†	0.06
Geo-Context		
Urban	-	-
Suburban	0.59 (0.32 – 1.11)	0.10
Rural	0.76 (0.38 – 1.51)	0.43
Control		
Proxy Interview		
No	-	-
Yes	1.56 (0.52 – 4.65)	0.42

CI: Confidence Interval; *p ≤ 0.05, **p < 0.01, ***p < 0.001, †p < 0.10 (borderline).

Table 12: Multivariate logistic regression model testing the effects of co-habitation with other non-relatives on one-year emotional abuse incidence

	Sample (n = 4156)	
	Adjusted Logistic Regression	
Variables	OR (95% CI)	P-Value
Physical Vulnerability		
Functional Capacity	0.82 (0.71 – 0.95)**	0.007
Age		
60 to 69	-	-
70 to 84	0.61 (0.38 – 1.00)*	0.05
85+	0.31 (0.12 – 0.77)*	0.011
Detailed Co-Habitation		
Lives With Other Non-Relatives		
No	**-**	**-**
Yes	**7.18 (1.53 – 33.69)***	**0.012**
Socio-Cultural		
Education		
Less than high-school	0.38 (0.15 – 0.98)*	0.046
High-school	0.40 (0.19 – 0.86)*	0.019
College (complete/some)	0.85 (0.45 – 1.58)	0.60
Post-graduate	-	-
Household Income		
< $30,000	-	-
≥ $30,000	0.51 (0.30 – 85)*	0.01
Geo-Context		
Urban	-	-
Suburban	0.56 (0.30 – 1.04)†	0.06
Rural	0.70 (0.35 – 1.39)	0.30
Control		
Proxy Interview		
No	-	-
Yes	1.45 (0.49 – 4.27)	0.50

CI: Confidence Interval; *p ≤ 0.05, **p < 0.01, ***p < 0.001, †p < 0.10 (borderline).

Older adults living with a spouse or partner had significantly lower odds (OR: 0.45, CI: 0.26 – 0.77) of experiencing emotional abuse in the past year. Older adults living with non-relatives other than friends or paid attendants (e.g., ex-spouse, tenant, roommate) had significantly higher odds (OR: 7.18, CI: 1.53 – 33.69) of emotional abuse.

Physical Abuse

Table 13 (Appendix C, p. 140) shows results from the bivariate tests and unadjusted logistic regression models exploring preliminary relationships between detailed cohabitation dynamic independent variables and one-year physical abuse incidence. Increasing numbers of older adults over age 60 in the home, co-habitation with a spouse/partner, and co-habitation with a paid attendant were significantly related to physical abuse in the past year.

The detailed co-habitation variables reaching significance in bivariate/unadjusted analysis were separately entered into the final multivariate logistic regression model predicting one-year physical abuse incidence above (Table 6), substituting the general co-habitation independent variable. Results of multivariate analyses regressing one-year physical abuse incidence on the number of older adults over age 60 in the household, spousal/partner co-habitation, and co-habitation with a paid attendant are shown in Tables 14, 15, and 16 respectively.

Table 14: Multivariate logistic regression model testing the effects of the number of older adults age 60 or above in the household on one-year physical abuse incidence

	Sample (n = 4156)	
	Adjusted Logistic Regression	
Variables	OR (95% CI)	P-Value
Physical Vulnerability		
Functional Capacity	0.85 (0.73 – 0.98)*	0.028
Age		
60 to 69	-	-
70 to 84	0.36 (0.21 – 0.60)***	< 0.001
85+	0.42 (0.20 – 0.90)*	0.026
Detailed Co-Habitation		
# Older Adults > 60	**0.65 (0.39 – 1.07)†**	**0.091**
Socio-Cultural		
Ethnicity		
Caucasian	-	-
African-American	1.41 (0.77 – 2.47)	0.25
Hispanic	0.78 (0.25 – 2.21)	0.64
Other	1.23 (0.38 – 4.29)	0.74
Education		
Less than high-school	0.24 (0.97 – 0.57)**	0.001
High school	0.24 (0.12 – 0.49)***	< 0.001
College (some/complete)	0.33 (0.18 – 0.59)***	< 0.001
Post-graduate	-	-
Household Income		
Below $30,000	2.26 (1.31 – 3.93)**	0.004
$30,000 or above	-	-
Geographic Context		
Urban	-	-
Suburban	0.57 (0.30 – 1.09)†	0.089
Rural	0.79 (0.38 – 1.62)	0.52
Control		
Proxy Interview		
No	-	-
Yes	1.68 (0.57 – 4.90)	0.34

CI: Confidence Interval; *p ≤ 0.05, **p < 0.01, ***p < 0.001, †p < 0.10 (borderline).

Table 15: Multivariate logistic regression model testing the effect of spouse/partner co-habitation on one-year physical abuse incidence

	Sample (n = 4156)	
	Adjusted Logistic Regression	
Variables	OR (95% CI)	P-Value
Physical Vulnerability		
Functional Capacity	0.85 (0.73 – 0.99)*	0.033
Age		
60 to 69	-	-
70 to 84	0.35 (0.21 – 0.60)***	< 0.001
85+	0.41 (0.20 – 0.90)*	0.023
Detailed Co-Habitation		
Live With Spouse		
No	**-**	**-**
Yes	**0.60 (0.36 – 1.02)†**	**0.057**
Socio-Cultural		
Ethnicity		
Caucasian	-	-
African-American	1.37 (0.77 – 2.45)	0.29
Hispanic	0.76 (0.26 – 2.21)	0.62
Other	1.29 (0.38 – 4.34)	0.68
Education		
Less than high-school	0.24 (0.97 – 0.57)**	0.001
High school	0.24 (0.12 – 0.49)***	< 0.001
College (some/complete)	0.32 (0.18 – 0.59)***	< 0.001
Post-graduate	-	-
Household Income		
Below $30,000	2.14 (1.23 – 3.72)**	0.007
$30,000 or above	-	-
Geographic Context		
Urban	-	-
Suburban	0.57 (0.30 – 1.10)†	0.092
Rural	0.81 (0.38 – 1.68)	0.57
Control		
Proxy Interview		
No	-	-
Yes	1.79 (0.61 – 5.25)	0.29

CI: Confidence Interval; *$p \leq 0.05$, **$p < 0.01$, ***$p < 0.001$, †$p < 0.10$ (borderline).

Table 16: Multivariate logistic regression model testing the effect of attendant co-habitation on one-year physical abuse incidence

	Sample (n = 4156)	
	Adjusted Logistic Regression	
Variables	OR (95% CI)	P-Value
Physical Vulnerability		
Functional Capacity	0.83 (0.72 – 0.96)*	0.012
Age		
60 to 69	-	
70 to 84	0.37 (0.22 – 0.62)***	< 0.001
85+	0.46 (0.22 – 0.98)*	0.044
Detailed Co-Habitation		
Live With Attendant		
No	**-**	**-**
Yes	**1.89 (0.36 – 9.90)**	**0.45**
Socio-Cultural		
Ethnicity		
Caucasian	-	-
African-American	1.40 (0.79 – 2.50)	0.25
Hispanic	0.76 (0.26 – 2.24)	0.62
Other	1.26 (0.37 – 4.26)	0.71
Education		
Less than high-school	0.25 (0.10 – 0.60)**	0.002
High school	0.25 (0.12 – 0.50)***	< 0.001
College (some/complete)	0.33 (0.18 – 0.60)***	< 0.001
Post-graduate	-	
Household Income		
Below $30,000	2.37 (1.38 – 4.09)**	0.002
$30,000 or above	-	-
Geographic Context		
Urban	-	-
Suburban	0.55 (0.29 – 1.06)†	0.075
Rural	0.77 (0.38 – 1.59)	0.49
Control		
Proxy Interview		
No	-	-
Yes	1.68 (0.57 – 4.94)	0.35

CI: Confidence Interval; *p ≤ 0.05, **p < 0.01, ***p < 0.001, †p < 0.10 (borderline).

Increasing numbers of older adults over age 60 in the household was associated with borderline significantly lower odds (OR: 0.65, CI: 0.39 – 1.07) of experiencing elder physical abuse in the past year. Compared to older adults who did not live with a spouse/partner, those living with a spouse/partner had borderline significantly lower odds (OR: 0.60, CI: 0.36 – 1.02)

of experiencing physical abuse. Paid attendant co-habitation status failed to reach borderline significance in multivariate analysis.

Neglect

Table 17 (Appendix C, p. 141) shows results from the bivariate tests and unadjusted logistic regression models exploring preliminary relationships between detailed cohabitation independent variables and one-year neglect incidence. None of the detailed co-habitation variables were significantly related to neglect in the past year and, therefore, bivariate/unadjusted analysis could not inform the selection of co-habitation variables for multivariate examination. The importance of family and inter-generational dynamics in understanding EA outcomes motivated exploration of the following detailed co-habitation variables in multivariate analysis: family co-habitation, spousal co-habitation, child co-habitation, and grandchild co-habitation. Each co-habitation variable was separately entered into the final multivariate regression model predicting neglect incidence above (Table 9), substituting the general co-habitation status independent variable. Consistent with bivariate/unadjusted analysis, none of these detailed co-habitation variables demonstrated significance in multivariate analysis (tables available upon request).

Objective Severity – Aim 2a: To identify factors associated with the objective severity of emotional abuse, physical abuse and neglect among mistreated, community-dwelling, cognitively intact older adults.

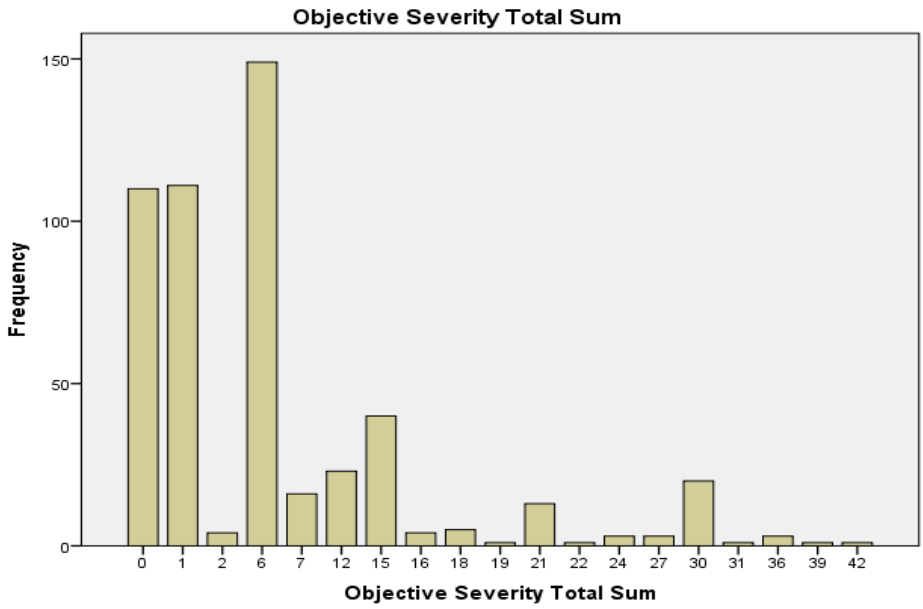
> **H_2**: Among older adults who have experienced some degree of EA, those with higher levels of physical vulnerability (lower physical health, lower functional capacity, higher age), relationship imbalance with the perpetrator (inter-generational difference, functional dependence), general cohabitation, (shared living arrangement, being married), and socio-

cultural disadvantage (female, lower income, below poverty line, lower education, marginalized race/ethnicity, non-English language, geographical isolation) will experience more severe levels of emotional abuse, physical abuse and neglect.

Emotional Abuse

A sub-sample of n = 509 older adults reported at least one emotional abuse survey item since age 60. This sub-sample had a mean objective severity score of 6.76 (SD = 8.25, range: 0 to 42). The distribution of emotional abuse objective severity scores (see Figure 1) was not normal (Kolmogorov-Smirnov Test of Normality < 0.001, Skewness = 1.69, Kurtosis = 2.59).

Figure 1: Frequency distribution of emotional abuse objective severity scores



The non-normal outcome distribution precluded use of OLS regression and, therefore, objective severity was converted into an ordinal variable. The following four clinically relevant ordinal outcome score categories emerged from the data distribution: 0, 1-5, 6-11, and 12 or more. A zero score represented older adults who experienced emotional abuse since age 60 but no abuse in the past year. A score of one to five represented an escalation of abuse frequency to

once within the past year. A score of six to eleven represented an escalation in abuse frequency to between two and ten times in the past year. Finally, a score of 12 or more represented an escalation in abuse frequency to ten or more times in the past year (or multiple abuse behaviors occurring between two and ten times). As shown in Table 18, respondents were fairly evenly distributed across the four outcome categories.

Table 18: Emotional abuse objective severity outcome category frequency distribution

Score Category	n (%)
0	110 (21.6)
1/2	115 (22.6)
6/7	165 (32.4)
12+	119 (23.4)

Table 19 (Appendix B, p. 127) shows results from the bivariate analysis to determine proxy/non-proxy interview differences in this new sub-sample. Older adults represented by proxy interviews were more functionally impaired, less healthy, older, and more likely to be in a shared living arrangement. They were also more likely to live in a suburban area, have the lowest level of education, be of widow or single marital status, and be of American Indian, Aleut, Eskimo, Asian or Pacific Islander background. Given these significant differences, proxy status was controlled for in subsequent multivariate analysis.

Bivariate tests and unadjusted multinomial regression models exploring preliminary relationships between independent variables and emotional abuse objective severity are shown in Table 20 (Appendix C, p. 142). The following independent variables were significantly related to emotional abuse objective severity: age, family perpetrator status, spousal/partner perpetrator status, friend perpetrator status, living arrangement, race/ethnicity, education, and household income.

Independent variables reaching significance in bivariate/unadjusted analysis were loaded simultaneously into final multivariate, multinomial regression to predict elder emotional abuse objective severity. Functional capacity was also included in final multivariate regression since it reached borderline significance ($p = 0.09$) and represented a key variable related to physical vulnerability. The victim-perpetrator relationship-type variables (family, spouse/partner, friend) reaching bivariate significance could not be loaded simultaneously into one final model due to moderate/high correlations and risk of multicollinearity. The family status perpetrator relationship-type variable was omitted from analysis since it failed to reach significance in both chi-square and unadjusted multinomial bivariate analysis. The spouse/partner and friend status perpetrator relationship-type variables were entered into two separate final models to avoid multicollinearity. Within the two final models, independent variables had tolerance of 0.73 or above, VIF of 1.25 or below, and correlations ranging in absolute value from 0.03 to 0.37, which indicated no concern of multicollinearity. The set of independent variables in the two final models satisfied representation across each of the dissertation model dimensions. Tables 21 and 22 show results of the final multivariate, multinomial regression models predicting elder emotional abuse objective severity with spouse/partner and friend perpetrators respectively.

Table 21: Multivariate multinomial regression model predicting objective emotional abuse severity with a spouse/partner perpetrator

Variables	Sample n = 509			
	Adjusted Multinomial Regression			
	Score 1/2	Score 6/7	Score 12+	
	OR (95% CI)	OR (95% CI)	OR (95% CI)	P-Value
Physical Vulnerability				
Functional Capacity				
Two impairments	1.47 (0.55 – 3.92)	2.13 (0.85 – 5.36)	2.41 (0.90 – 6.44)†	0.08
One impairment	0.47 (0.17 – 1.27)	0.67 (0.27 – 1.63)	1.31 (0.55 – 3.11)	0.55
None	-	-	-	-
Age				
60 to 69	4.78 (1.70 – 13.47)**	5.87 (2.34 – 14.76)***	10.49 (3.01 – 36.53)***	<0.001
70 to 84	2.19 (0.84 – 5.76)	1.17 (0.49 – 2.79)	3.49 (1.05 – 11.61)*	0.04
85 or older	-	-	-	-
Victim-Perpetrator Relationship				
Perpetrator is Spouse				
No	-	-	-	-
Yes	0.77 (0.35 – 1.69)	1.35 (0.64 – 2.84)	1.92 (0.92 – 4.04)†	0.087
General Co-Habitation				
Living Arrangement				
Not shared	0.76 (0.42 – 1.40)	0.77 (0.43 – 1.38)	0.52 (0.27 – 0.98)*	0.044
Shared	-	-	-	-
Socio-Cultural				
Education				
Less than high-school	0.89 (0.32 – 2.46)	1.79 (0.70 – 4.56)	0.79 (0.28 – 2.24)	0.65
High-school	0.39 (0.20 – 0.79)**	1.07 (0.58 – 1.96)	0.50 (0.26 – 0.99)*	0.047
More than high-school	-	-	-	-
Ethnicity				
Other	0.76 (0.10 – 5.72)	1.49 (0.25 – 8.97)	4.16 (0.79 – 21.95)†	0.093
African-American	0.81 (0.38 – 1.71)	0.82 (0.40 – 1.67)	1.29 (0.62 – 2.68)	
Hispanic	2.21 (0.52 – 9.34)	3.82 (0.99 – 14.69)*	1.97 (0.43 – 9.10)	0.05
Caucasian	-	-	-	-
Household Income	0.99 (0.85 – 1.15)	1.10 (0.96 – 1.27)	0.96 (0.82 – 1.12)	0.61

Control				
Proxy interview				
No	0.84 (0.23 – 3.04)	1.10 (0.32 – 3.74)	1.96 (0.44 – 8.67)	0.38
Yes	-	-	-	-

CI: Confidence Interval; *p ≤ 0.05, **p < 0.01, ***p < 0.001, †p < 0.10 (borderline). Referent category for multinomial regression: score = 0. Notes: The three-level ordinal functional capacity variable was used instead of the continuous variable since the former reached borderline significance in bivariate/unadjusted analysis. The three-level ordinal age variable was used instead of the continuous variable since the former builds on the literature by isolating the oldest-old age group. The final model satisfied both the Omnibus Test of Model Coefficients (p < 0.01) and the Hosmer-Lemeshow Test (p > 0.05).

Table 22: Multivariate multinomial regression model predicting objective emotional abuse severity with a friend perpetrator

Variables	Sample n = 509			
	Adjusted Multinomial			
	Score = 1/2 (low)	Score = 6/7 (mod)	Score = 12+ (high)	
	OR (95% CI)	OR (95% CI)	OR (95% CI)	P-Value
Physical Vulnerability				
Functional Capacity				
Two impairments	1.46 (0.55 – 3.87)	1.98 (0.79 – 4.97)	2.14 (0.80 – 5.71)	0.13
One impairment	0.47 (0.17 – 1.25)	0.63 (0.26 – 1.51)	1.20 (0.51 – 2.82)	0.68
None	-	-	-	-
Age				
60 to 69	4.65 (1.65 – 13.10)**	6.05 (2.39 – 15.33)***	10.94 (3.14 – 38.18)***	<0.001
70 to 84	2.09 (0.79 – 5.49)	1.16 (0.48 – 2.80)	3.44 (1.03 – 11.45)*	0.045
85 or older	-	-	-	-
Victim-Perpetrator Relationship				
Perpetrator is Friend				
No	-	-	-	-
Yes	0.59 (0.26 – 1.32)	0.44 (0.17 – 1.12)†	0.38 (0.15 – 0.93)*	0.037
General Co-Habitation				
Living arrangement				
Alone	0.82 (0.42 – 1.40)	0.77 (0.43 – 1.37)	0.49 (0.26 – 0.94)*	0.028
Shared	-	-	-	-
Socio-Cultural				
Education				
Less than high-school	0.93 (0.32 – 2.42)	1.95 (0.75 – 5.06)	0.88 (0.29 – 2.54)	0.81
High-school	0.40 (0.20 – 0.80)**	1.06 (0.57 – 1.94)	0.50 (0.25 – 0.98)*	0.042
More than high-school	-	-	-	-
Ethnicity				
Other	0.86 (0.11 – 6.60)	1.50 (0.24 – 9.24)	3.93 (0.73 – 21.09)	0.66
African-American	0.91 (0.44 – 1.90)	0.82 (0.40 – 1.65)	1.15 (0.56 – 2.36)	0.58
Hispanic	2.23 (0.54 – 9.31)	3.49 (0.92 – 13.26)†	1.66 (0.36 – 7.57)	0.067
Caucasian	-	-	-	-

Household Income	0.98 (0.84 – 1.15)	1.11 (0.96 – 1.27)	0.97 (0.82 – 1.14)	0.74
Control				
Proxy interview				
No	0.91 (0.25 – 3.32)	1.25 (0.36 – 4.30)	2.21 (0.50 – 9.84)	0.30
Yes	-	-	-	-

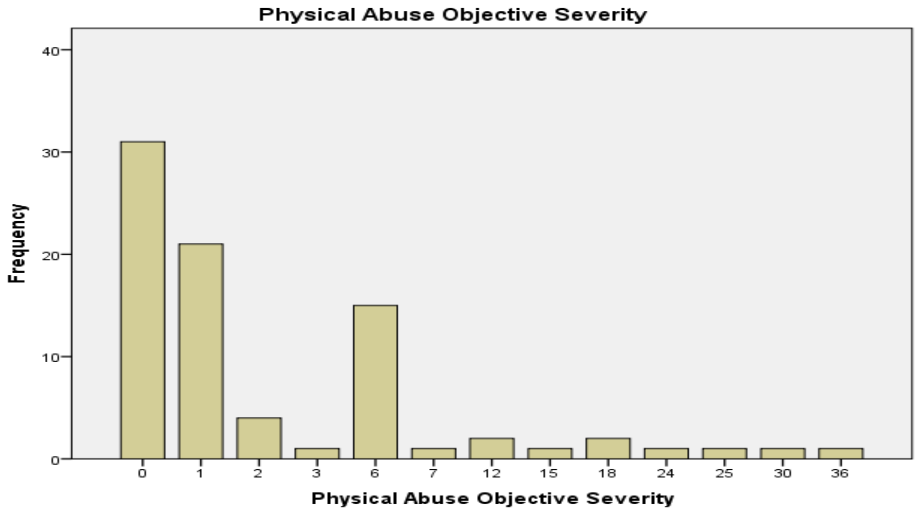
CI: Confidence Interval; *p ≤ 0.05, **p < 0.01, ***p < 0.001, †p < 0.10 (borderline). Referent category for multinomial regression: score = 0. Notes: The three-level ordinal functional capacity variable was used instead of the continuous variable since the former reached borderline significance in bivariate/unadjusted analysis. The three-level ordinal age variable was used instead of the continuous variable since the former builds on the literature by isolating the oldest-old age group. The final model satisfied both the Omnibus Test of Model Coefficients (p < 0.01) and the Hosmer-Lemeshow Test (p > 0.05).

Compared to adults in the oldest-old age group, adults in both the youngest age group [spouse perpetrator – OR: 10.49, CI: 3.01 – 36.53; friend perpetrator – OR: 10.94, CI: 3.14 – 38.18] and middle age group [spouse perpetrator – OR: 3.49, CI: 1.05 – 11.61); friend perpetrator – OR: 3.44, CI: 1.03 – 11.45] had significantly higher odds of enduring the most objectively severe levels of emotional abuse. Older adults living alone had significantly lower odds [spouse perpetrator – OR: 0.52, CI: 0.27 – 0.98; friend perpetrator – OR: 0.49, CI: 0.26 – 0.94] of experiencing the highest level of emotional abuse severity compared to older adults living in a shared arrangement. Compared to older adults with education greater than high-school, those with a high-school-only education had significantly lower odds [spouse perpetrator – OR: 0.50, CI: 0.26 – 0.99; friend perpetrator – OR: 0.50, CI: 0.25 – 0.98)] of enduring more severe levels of emotional abuse. Hispanic older adults had significantly (spouse perpetrator – OR: 3.82, 0.99 – 14.69) or borderline (friend perpetrator – OR: 3.49, CI: 0.92 – 13.26) higher odds of experiencing moderately severe emotional abuse. Finally, older adults with a friend perpetrator had significantly lower odds (OR: 0.38, CI: 0.15 – 0.93) of enduring the most objectively severe levels of emotional abuse. Older adults with a spouse/partner perpetrator had borderline significantly higher odds (OR: 1.92, CI: 0.92 – 4.04) of enduring the most severe levels of emotional abuse.

Physical Abuse

A sub-sample of n = 89 older adults reported at least one physical abuse survey item since age 60. This sub-sample had a mean objective physical abuse severity score of 3.89 (SD = 6.99, range: 0 to 36). The distribution of physical abuse objective severity scores (see Figure 2) was not normal (Kolmogorov-Smirnov Test of Normality < 0.001, Skewness = 2.76, Kurtosis = 8.07).

Figure 2: Frequency distribution of physical abuse objective severity scores



A non-normal continuous outcome distribution precluded use of OLS regression. Therefore, objective severity scores were converted into an ordinal variable. A dichotomous ordinal outcome operationalization was used to maintain adequate power and avoid regression instability with such a small sub-sample size. Two score categories, 0-5 and 6 or more, emerged from the data distribution with clinical relevance. The threshold between these two categories represented an escalation in physical abuse frequency from once per year to between two and ten times per year. A score of 6 or more represented approximately the top tertile of scores (30.5%) in the data distribution; it was important to isolate this group of unusually high-scoring older adults to understand differences in severity.

Table 23 (Appendix B, p. 128) shows results from the bivariate analysis to determine if differences exist between proxy and non-proxy interviews. Older adults represented by proxy interviews were more functionally impaired, less healthy, older, and more likely to be female. Given these significant differences, proxy status was controlled for in subsequent multivariate analysis.

Bivariate tests and unadjusted logistic regression models exploring preliminary relationships between independent variables and physical abuse objective severity are shown in Table 24 (Appendix C, p. 145). Results suggested that only victim age and a grandchild perpetrator relationship type were significantly related to physical abuse objective severity.

A small analytic sub-sample limited the number of independent variables that could be loaded simultaneously into the final multivariate logistic regression model predicting objective physical abuse severity. Two independent variables (age, grandchild perpetrator relation) reached significance in bivariate/unadjusted analysis. To ensure representation across each of the dissertation conceptual model dimensions in the final model, it was necessary to expand multivariate analytic eligibility criteria to independent variables reaching borderline significance in bivariate/unadjusted analysis. Using this expanded criterion, functional capacity and general living arrangement were included in the final model. None of the socio-cultural variables reached borderline significance in bivariate/unadjusted analysis. The literature is unclear as to which socio-cultural variables are important to physical abuse severity risk; therefore, gender was included in the final model. This group of independent variables satisfied representation across each of the conceptual model dimensions. Collectively, these independent variables had tolerance of 0.81 or above, VIF of 1.24 or below, and correlations ranging in absolute value from 0.01 to 0.33, which indicated no concern of multicollinearity. With such a small number of respondents (n = 6) represented by a proxy interview, proxy status failed to converge in logistic regression and, thus, was omitted from multivariate analysis to avoid model instability. Table 25 shows results from the final multivariate logistic regression model predicting elder physical abuse objective severity.

Table 25: Multivariate logistic regression model predicting physical abuse objective severity Sample (n = 89)

	Adjusted Logistic Regression	
Variables	OR (95% CI)	P-Value
Physical Vulnerability		
Functional Capacity		
No limitations	-	-
One limitation	1.62 (0.26 – 10.25)	0.61
Two limitations	0.40 (0.06 – 2.57)	0.33
Age		
60 to 69	-	-
70 to 84	0.16 (0.03 – 0.73)*	0.02
85 or older	0.82 (0.17 – 4.08)	0.81
General Co-Habitation		
Living arrangement		
Alone	-	-
Shared	1.93 (0.52 – 7.11)	0.32
Victim-Perpetrator Relationship		
Grandchild Perpetrator		
No	-	-
Yes	9.89 (0.99 – 98.93)*	0.05
Socio-Cultural		
Gender		
Male	-	-
Female	0.50 (0.17 – 1.50)	0.22

CI: Confidence Interval; *$p \leq 0.05$, **$p < 0.01$, ***$p < 0.001$, †$p < 0.10$ (borderline). Notes: The three-level ordinal functional capacity variable was used instead of the continuous variable since the former reached borderline significance in bivariate/unadjusted analysis. The three-level ordinal age variable was used instead of the continuous variable since the former builds on the literature by isolating the oldest-old age group. The final model satisfied both the Omnibus Test of Model Coefficients ($p < 0.01$) and the Hosmer-Lemeshow Test ($p > 0.05$).

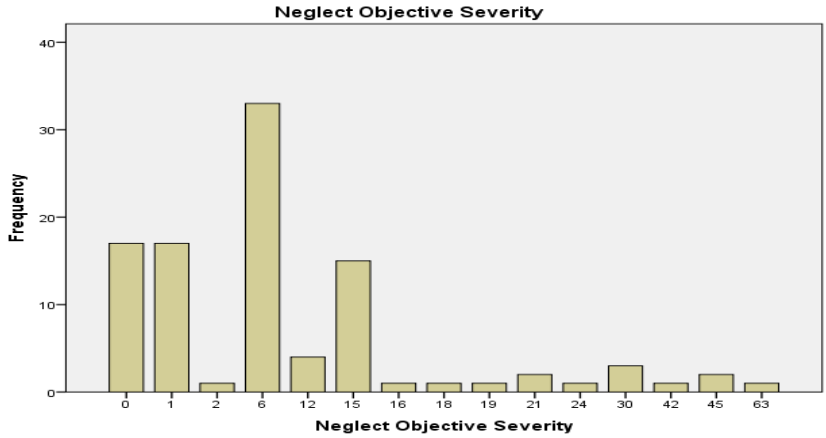
Compared to older adults in the youngest age group, those in the middle age group had significantly lower odds (OR: 0.16, CI: 0.03 – 0.73) of enduring more objectively severe levels of physical abuse. Older adult victims with a grandchild perpetrator had significantly higher odds (OR: 9.89, CI: 0.99 – 98.93) of enduring more severe physical abuse.

Neglect

A sub-sample of n = 109 older adults reported at least one unmet ADL or IADL need by a responsible caregiver since age 60. This sub-sample had a mean objective neglect severity

score of 8.94 (SD = 11.03, Range: 0 to 63). The distribution of objective neglect severity scores (see Figure 3) was not normal (Kolmogorov-Smirnov Test of Normality < 0.001, Skewness = 2.35, Kurtosis = 7.07).

Figure 3: Frequency distribution of neglect objective severity scores



A non-normal continuous outcome distribution prevented use of OLS regression. Therefore, objective severity scores were converted into an ordinal variable. A dichotomous ordinal outcome operationalization was used to maintain adequate power and avoid regression instability with a small sub-sample size. Two score categories, 0-11 and 12 or more, emerged from the data distribution with clinical relevance. A 0-11 score represented at most one unmet ADL/IADL need occurring two to ten times in the past year. A score of 12 or more represented unmet ADL/IADL needs occurring ten or more times in the past year (or multiple unmet needs occurring between two and ten times). A score of 12 or more represented approximately the top tertile of scores (32.0%) in the data distribution; it was important to isolate this group of unusually high-scoring older adults to understand differences in severity.

Table 26 (Appendix B, p. 129) shows results from the bivariate analysis to determine proxy/non-proxy interview differences. Older adults represented by proxy interviews were more

functionally impaired, older, and more likely to live in an urban context. Given these significant differences, proxy status was controlled for in subsequent multivariate analysis.

Bivariate tests and unadjusted logistic regression models exploring preliminary relationships between independent variables and objective neglect severity are shown in Table 27 (Appendix C, p. 148). Results suggested that victim functional capacity, age, and household income were significantly related to objective neglect severity.

Since only three independent variables (functional capacity, age, household income) reached significance in bivariate/unadjusted analysis, it was necessary to expand multivariate analytic eligibility criteria to include independent variables reaching borderline significance. The paid attendant perpetrator relationship type variable was included in the final model since it was the only victim-perpetrator relationship-type variable to reach borderline significance. None of the general co-habitation status variables reached borderline significance in bivariate/unadjusted analysis. Therefore, general living arrangement (alone/shared) was included in the final model given its direct relevance to the co-habitation dimension. This group of independent variables satisfied representation across each of the dissertation conceptual model dimensions. Collectively, these independent variables had tolerance of 0.77 or above, VIF of 1.29 or below, and correlations ranging in absolute value from 0.003 to 0.36, which indicated no concern of multicollinearity. Table 28 shows results from the final multivariate logistic regression model predicting elder neglect objective severity.

Table 28: Multivariate logistic regression model predicting elder neglect objective severity Sample (n = 109)

	Adjusted Logistic regression	
Variables	OR (95% CI)	P-Value
Physical Vulnerability		
Functional Capacity	0.70 (0.51 – 0.95)*	0.022
Age		
60 to 69	-	-
70 to 84	0.29 (0.10 – 0.85)*	0.025
85 or older	0.31 (0.06 – 1.59)	0.16
Co-Habitation		
Living Arrangement		
Alone	-	-
Shared	1.25 (0.42 – 3.74)	0.69
Victim-Perpetrator Relationship		
Perpetrator is Attendant		
No	-	-
Yes	1.18 (0.35 – 4.03)	0.79
Socio-Cultural		
Household Income (cont.)	0.76 (0.59 – 0.98)*	0.036
Control		
Proxy Interview		
No	-	-
Yes	0.63 (0.14 – 2.83)	0.55

CI: Confidence Interval; *$p \leq 0.05$, **$p < 0.01$, ***$p < 0.001$, †$p < 0.10$ (borderline). Notes: The continuous functional capacity variable was used instead of the three-level ordinal version since the former captures the full variation in functional capacity. The three-level ordinal age variable was used instead of the continuous variable since the former isolates the oldest-old age group. The final model satisfied the Omnibus Test of Model Coefficients ($p < 0.01$) and the Hosmer-Lemeshow Test ($p > 0.05$).

As functional capacity/independence increases, older adults had significantly lower odds (OR: 0.70, CI: 0.51 – 0.95) of experiencing more objectively severe levels of neglect. Older adults in the middle-age category had significantly lower odds (OR: 0.29, CI: 0.10 – 0.85) of enduring more severe levels of neglect compared to older adults in the youngest age category. As household income increased, older adults had significantly lower odds (OR: 0.76, CI: 0.59 – 0.98) of experiencing more severe levels of neglect.

Objective Severity – Aim 2b: To further explore home environment co-habitation dynamics (beyond general co-habitation status) associated with the objective severity of emotional abuse, physical abuse and neglect.

Exploratory Question 2: Among older adults who have experienced some degree of EA, which of the following detailed co-habitation dynamics are associated with the objective severity of emotional abuse, physical abuse, and neglect: number of co-habitants, number of co-habitants over age 60, level of family-member co-habitation, level of perpetrator co-habitation, level of non-perpetrator co-habitation, and co-habitant relationship type (spouse/partner, children, in-law children, grandchildren, other relatives, friends, paid attendant, other non-relatives)?

Emotional Abuse

Table 29 (Appendix C, p. 151) shows the bivariate tests and unadjusted multinomial regression models exploring preliminary relationships between detailed cohabitation dynamic independent variables and objective emotional abuse severity. Results found that number of co-habitants, family co-habitation, perpetrator (general) co-habitation, perpetrator/non-perpetrator (specified) co-habitation, and grandchild co-habitation were significantly related to emotional abuse objective severity.

Co-habitation variables reaching significance in bivariate/unadjusted analyses were separately entered into the final multivariate regression model predicting objective emotional abuse severity above (Table 22), substituting the general co-habitation status independent variable. Results of the separate multivariate models regressing objective emotional abuse severity on number of co-habitants, family co-habitation, perpetrator co-habitation (general),

perpetrator/non-perpetrator co-habitation (specified), and grandchild co-habitation are shown in Tables 30 to 34.

Table 30: Multivariate multinomial regression model testing the effects of the number of co-habitants on objective emotional abuse severity.

	Sample n = 509			
	Adjusted Multinomial Regression			
	Score = 1/2 (low)	Score = 6/7 (mod)	Score = 12+ (high)	
Variables	OR (95% CI)	OR (95% CI)	OR (95% CI)	P-Value
Physical Vulnerability				
Functional Capacity				
Two impairments	1.44 (0.54 – 3.84)	1.98 (0.79 – 4.96)	2.18 (0.82 – 5.80)	0.12
One impairment	0.45 (0.17 – 1.20)	0.61 (0.25 – 1.47)	1.15 (0.49 – 2.69)	0.75
None	-	-	-	-
Age				
60 to 69	4.73 (1.68 – 13.37)**	5.96 (2.35 – 15.11)***	10.4 (3.14 – 38.18)***	<0.001
70 to 84	2.10 (0.80 – 5.53)	1.14 (0.47 – 2.74)	3.30 (1.03 – 11.45)*	0.051
85 or older	-	-	-	-
Victim-Perpetrator Relationship				
Perpetrator is friend				
No	1.73 (0.77 – 3.89)	2.26 (0.89 – 5.72)†	2.60 (1.07 – 6.33)*	0.037
Yes	-	-	-	-
Detailed Co-Habitation				
Number Co-habitants	**1.04 (0.78 – 1.38)**	**1.14 (0.88 – 1.48)**	**1.34 (1.04 – 1.74)***	**0.026**
Socio-Cultural				
Education				
Less than high-school	0.95 (0.34 – 2.62)	1.94 (0.75 – 5.04)	0.88 (0.29 – 2.54)	0.83
High-school	0.41 (0.20 – 0.81)*	1.06 (0.58 – 1.94)	0.50 (0.25 – 0.98)*	0.042
More than high-school	-	-	-	-
Ethnicity				
Other	0.86 (0.11 – 6.61)	1.43 (0.23 – 8.87)	3.54 (0.73 – 21.09)	0.14
African-American	0.90 (0.43 – 1.87)	0.79 (0.39 – 1.60)	1.05 (0.56 – 2.36)	0.91
Hispanic	2.27 (0.54 – 9.48)	3.58 (0.94 – 13.68)†	1.73 (0.36 – 7.57)	0.062
Caucasian	-	-	-	-
Household Income	0.99 (0.85 – 1.15)	1.11 (0.97 – 1.28)	1.0 (0.86 – 1.16)	0.95
Control				

Proxy interview				
No	0.87 (0.23 – 3.25)	1.29 (0.37 – 4.54)	2.47 (0.50 – 9.84)	0.24
Yes	-	-	-	-

CI: Confidence Interval; *p ≤ 0.05, **p < 0.01, ***p < 0.001, †p < 0.10 (borderline). Referent category for multinomial regression: score = 0. The final model satisfied both the Omnibus Test of Model Coefficients (p < 0.01) and the Hosmer-Lemeshow Test (p > 0.05).

Table 31: Multivariate multinomial regression model testing the effect of family co-habitation on objective emotional abuse severity.

	Sample n = 509			
	Adjusted Multinomial Regression			
	Score = 1/2 (low)	Score = 6/7 (mod)	Score = 12+ (high)	
Variables	OR (95% CI)	OR (95% CI)	OR (95% CI)	P-Value
Physical Vulnerability				
Functional Capacity				
Two impairments	1.45 (0.54 – 3.84)	1.99 (0.79 – 4.96)	2.12 (0.82 – 5.80)	0.13
One impairment	0.46 (0.17 – 1.20)	0.63 (0.25 – 1.47)	1.17 (0.49 – 2.69)	0.72
None	-	-	-	-
Age				
60 to 69	4.80 (1.68–13.37)**	6.30 (2.35–15.11)***	11.26 (3.14–38.18)***	<0.001
70 to 84	2.15 (0.80 – 5.53)	1.21 (0.47 – 2.74)	3.52 (1.03 – 11.45)*	0.041
85 or older	-	-	-	-
Victim-Perpetrator Relationship				
Perpetrator is friend				
No	1.80 (0.77 – 3.89)	2.55 (0.99 – 6.55)†	2.80 (1.13 – 6.96)*	0.029
Yes	-	-	-	-
Detailed Co-Habitation				
Family Co-habitation				
Lives alone	**-**	**-**	**-**	**-**
Lives with family only	**1.09 (0.59 – 2.02)**	**1.08 (0.60 – 1.96)**	**1.80 (0.94 – 3.44)†**	**0.065**
Lives with family and others	**1.12 (0.22 – 5.78)**	**0.89 (0.18 – 4.36)**	**1.68 (0.32 – 8.83)**	**0.54**
Lives with non-family only	**3.21 (0.36 – 28.87)**	**6.71 (0.90 – 50.02)†**	**5.10 (0.57 – 45.86)**	**0.077**
Socio-Cultural				
Education				
Less than high-school	0.99 (0.34 – 2.62)	2.11 (0.75 – 5.04)	0.94 (0.29 – 2.54)	0.91
High-school	0.42 (0.20 – 0.81)*	1.14 (0.58 – 1.94)	0.52 (0.25 – 0.98)†	0.063
More than high-school	-	-	-	-
Ethnicity				
Other	0.91 (0.11 – 6.61)	1.65 (0.23 – 8.87)	4.13 (0.73 – 21.09)†	0.099
African-American	0.93 (0.43 – 1.87)	0.84 (0.39 – 1.60)	1.18 (0.56 – 2.36)	0.65
Hispanic	2.32 (0.54 – 9.48)	3.80 (0.94 – 13.68)*	1.73 (0.36 – 7.57)	0.051

Caucasian	-	-	-	-
Household Income	1.0 (0.85 – 1.15)	1.15 (0.97 – 1.28)†	0.99 (0.86 – 1.16)	0.068
Control				
Proxy interview				
No	0.87 (0.23 – 3.25)	1.12 (0.37 – 4.54)	2.07 (0.50 – 9.84)	0.34
Yes	-	-	-	-

CI: Confidence Interval; *p ≤ 0.05, **p < 0.01, ***p < 0.001, †p < 0.10 (borderline). Referent category for multinomial regression: score = 0. The final model satisfied both the Omnibus Test of Model Coefficients (p < 0.01) and the Hosmer-Lemeshow Test (p > 0.05).

Table 32: Multivariate multinomial regression model testing the effect of general perpetrator co-habitation on objective emotional abuse severity.

	Sample n = 509			
	Adjusted Multinomial Regression			
	Score = 1/2 (low)	Score = 6/7 (mod)	Score = 12+ (high)	
Variables	OR (95% CI)	OR (95% CI)	OR (95% CI)	P-Value
Physical Vulnerability				
Functional Capacity				
Two impairments	1.49 (0.54 – 3.84)	2.01 (0.79 – 4.96)	2.20 (0.82 – 5.80)	0.12
One impairment	0.45 (0.17 – 1.20)	0.60 (0.25 – 1.47)	1.09 (0.49 – 2.69)	0.85
None	-	-	-	-
Age				
60 to 69	4.64 (1.68 – 13.37)**	6.01 (2.35– 5.11)***	11.38 (3.14–38.18)***	<0.001
70 to 84	2.15 (0.80 – 5.53)	1.22 (0.47 – 2.74)	3.81 (1.03 – 11.45)*	0.033
85 or older	-	-	-	-
Victim-Perpetrator Relationship				
Perpetrator is friend				
No	1.45 (0.77 – 3.89)	1.74 (0.99 – 6.55)	1.86 (0.71 – 4.86)	0.21
Yes	-	-	-	-
Detailed Co-Habitation				
Perpetrator Co-habitation				
No	-	-	-	-
Yes	**2.05 (0.92 – 4.56)†**	**2.86 (1.27 – 6.46)***	**4.41 (1.96 – 9.90)****	**0.001**
Socio-Cultural				
Education				
Less than high-school	0.91 (0.34 – 2.62)	1.85 (0.75 – 5.04)	0.83 (0.29 – 2.54)	0.74
High-school	0.39 (0.20 – 0.81)**	1.00 (0.58 – 1.94)	0.47 (0.25 – 0.98)*	0.033
More than high-school	-	-	-	-
Ethnicity				
Other	0.97 (0.11 – 6.61)	1.84 (0.23 – 8.87)	5.29 (0.73 – 21.09)†	0.057
African-American	0.92 (0.43 – 1.87)	0.83 (0.39 – 1.60)	1.17 (0.56 – 2.36)	0.68
Hispanic	2.32 (0.54 – 9.48)	3.87 (0.94 – 13.68)*	1.98 (0.36 – 7.57)	0.048
Caucasian	-	-	-	-

Household Income	0.98 (0.85 – 1.15)	1.09 (0.97 – 1.28)	0.96 (0.82 – 1.12)	0.61
Control				
Proxy interview				
No	1.17 (0.23 – 3.25)	1.73 (0.37 – 4.54)	2.98 (0.66 – 13.49)	0.16
Yes	-	-	-	-

CI: Confidence Interval; *p ≤ 0.05, **p < 0.01, ***p < 0.001, †p < 0.10 (borderline). Referent category for multinomial regression: score = 0. The final model satisfied both the Omnibus Test of Model Coefficients (p < 0.01) and the Hosmer-Lemeshow Test (p > 0.05).

Table 33: Multivariate multinomial regression model testing the effect of specified perpetrator/non-perpetrator co-habitation on objective emotional abuse severity.

	Sample n = 509			
	Adjusted Multinomial Regression			
	Score = 1/2 (low)	Score = 6/7 (mod)	Score = 12+ (high)	
Variables	OR (95% CI)	OR (95% CI)	OR (95% CI)	P-Value
Physical Vulnerability				
Functional Capacity				
Two impairments	1.47 (0.54 – 3.84)	1.98 (0.79 – 4.96)	2.17 (0.82 – 5.80)	0.13
One impairment	0.45 (0.17 – 1.20)	0.60 (0.25 – 1.47)	1.09 (0.49 – 2.69)	0.86
None	-	-	-	-
Age				
60 to 69	4.84 (1.68–13.37)**	6.20 (2.35–15.11)***	11.98 (3.14–8.18)***	<0.001
70 to 84	2.25 (0.80 – 5.53)	1.26 (0.47 – 2.74)	4.0 (1.03 – 11.45)*	0.028
85 or older	-	-	-	-
Victim-Perpetrator Relationship				
Perpetrator is friend				
No	1.40 (0.77 – 3.89)	1.70 (0.99 – 6.55)	1.85 (0.71 – 4.86)	0.21
Yes	-	-	-	-
Detailed Co-Habitation				
Perpetrator/Non-perpetrator Co-habitation (specified)				
Lives alone	**-**	**-**	**-**	**-**
Lives alone w/ perpetrator	**2.09 (0.85 – 5.13)**	**2.69 (1.09 – 6.65)***	**5.19 (2.09 – 12.86)****	**0.001**
Lives w/ perpetrator and non-perpetrator others	**1.71 (0.47 -6.30)**	**2.36 (0.59 – 0.56)**	**2.83 (0.71 – 11.27)**	**0.14**
Lives only w/ non-perpetrators	**0.75 (0.35 – 1.63)**	**0.74 (0.36 – 1.54)**	**0.84 (0.38 – 1.85)**	**0.66**
Socio-Cultural				
Education				
Less than high-school	0.93 (0.34 – 2.62)	1.92 (0.75 – 5.04)	0.85 (0.29 – 2.54)	0.77
High-school	0.39 (0.20 – 0.81)**	1.00 (0.58 – 1.94)	0.46 (0.25 – 0.98)*	0.031
More than high-school	-	-	-	-
Ethnicity				

Other	1.06 (0.11 – 6.61)	1.98 (0.23 – 8.87)	5.85 (0.73 – 21.09)*	0.046
African-American	0.93 (0.43 – 1.87)	0.83 (0.39 – 1.60)	1.22 (0.56 – 2.36)	0.60
Hispanic	2.36 (0.54 – 9.48)	3.86 (0.94 – 13.68)*	1.97 (0.36 – 7.57)	0.049
Caucasian	-	-	-	-
Household Income	0.99 (0.84 – 1.15)	1.10 (0.97 – 1.28)	0.97 (0.82 – 1.12)	0.66
Control				
Proxy interview				
No	1.10 (0.23 – 3.25)	1.64 (0.37 – 4.54)	2.61 (0.66 – 13.49)	0.22
Yes	-	-	-	-

CI: Confidence Interval; *p ≤ 0.05, **p < 0.01, ***p < 0.001, †p < 0.10 (borderline). Referent category for multinomial regression: score = 0. The final model satisfied both the Omnibus Test of Model Coefficients (p < 0.01) and the Hosmer-Lemeshow Test (p > 0.05).

Table 34: Multivariate multinomial regression model testing the effect of grandchild co-habitation on objective emotional abuse severity.

	Sample n = 509			
	Adjusted Multinomial Regression			
	Score = 1/2 (low)	Score = 6/7 (mod)	Score = 12+ (high)	
Variables	OR (95% CI)	OR (95% CI)	OR (95% CI)	P-Value
Physical Vulnerability				
Functional Capacity				
Two impairments	1.44 (0.54 – 3.84)	1.92 (0.79 – 4.96)	2.10 (0.82 – 5.80)	0.14
One impairment	0.46 (0.17 – 1.20)	0.65 (0.25 – 1.47)	1.16 (0.49 – 2.69)	0.73
None	-	-	-	-
Age				
60 to 69	4.69 (1.68 – 13.37)**	5.69 (2.35–15.11)***	11.27 (3.14–38.18)***	<0.001
70 to 84	2.07 (0.80 – 5.53)	1.02 (0.47 – 2.74)	3.26 (1.03 – 11.45)†	0.06
85 or older	-	-	-	-
Victim-Perpetrator Relationship				
Perpetrator is friend				
No	1.71 (0.77 – 3.89)	2.20 (0.99 – 6.55)	2.68 (0.71 – 4.86)*	0.033
Yes	-	-	-	-
Detailed Co-Habitation				
Grandchild Co-habitation				
No	**-**	**-**	**-**	**-**
Yes	**1.27 (0.40 – 4.04)**	**3.02 (1.09 – 8.36)***	**2.40 (0.82 – 7.01)**	**0.033**
Socio-Cultural				
Education				
Less than high-school	0.95 (0.34 – 2.62)	1.91 (0.75 – 5.04)	0.92 (0.29 – 2.54)	0.87
High-school	0.42 (0.20 – 0.81)*	1.08 (0.58 – 1.94)	0.55 (0.25 – 0.98)†	0.08
More than high-school	-	-	-	-
Ethnicity				
Other	0.85 (0.11 – 6.61)	1.48 (0.23 – 8.87)	3.86 (0.73 – 21.09)	0.046
African-American	0.90 (0.43 – 1.87)	0.74 (0.39 – 1.60)	1.04 (0.56 – 2.36)	0.92
Hispanic	2.31 (0.54 – 9.48)	3. 61 (0.94 – 13.68)†	1.73 (0.36 – 7.57)	0.062
Caucasian	-	-	-	-

Household Income	1.0 (0.84 – 1.15)	1.13 (0.97 – 1.28)†	1.03 (0.88 – 1.19)	0.081
Control				
Proxy interview				
No	0.83 (0.23 – 3.25)	1.53 (0.37 – 4.54)	2.15 (0.66 – 13.49)	0.32
Yes	-	-	-	-

CI: Confidence Interval; *p ≤ 0.05, **p < 0.01, ***p < 0.001, †p < 0.10 (borderline). Referent category for multinomial regression: score = 0. The final model satisfied both the Omnibus Test of Model Coefficients (p < 0.01) and the Hosmer-Lemeshow Test (p > 0.05).

As the number of co-habitants increased, older adults had significantly higher odds (OR: 1.34, CI: 1.04 – 1.74) of enduring the most objectively severe level of emotional abuse. Living with the perpetrator was associated with significantly higher odds of enduring the most severe level of emotional abuse (OR: 4.41, CI: 1.96 – 9.90). More specifically, living alone with the perpetrator was associated with significantly higher odds of experiencing the most severe level of emotional abuse (OR: 5.19, CI: 2.09 – 12.86). The significance of perpetrator co-habitation was lost in situations where non-perpetrator co-habitants were present. Older adults living with a grandchild had significantly greater odds of experiencing moderately severe emotional abuse (OR: 3.02, CI: 1.09 – 8.36).

Physical Abuse

Table 35 (Appendix C, p. 153) shows the bivariate tests and unadjusted logistic regression models exploring preliminary, individual relationships between detailed cohabitation dynamic independent variables and objective physical abuse severity. Results found that number of co-habitants, family co-habitation, and perpetrator/non-perpetrator co-habitation (specified) were significantly related to physical abuse objective severity.

The detailed co-habitation variables reaching significance in bivariate/unadjusted analyses were separately entered into the final multivariate logistic regression model predicting objective physical abuse severity above (Table 25), substituting the general co-habitation status independent variable. Results of the separate multivariate models regressing objective physical abuse severity on number of co-habitants, family co-habitation, and perpetrator/non-perpetrator co-habitation (specified) are shown in Tables 36, 37, and 38 respectively.

Table 36: Multivariate logistic regression model testing the effects of the number of co-habitants on objective physical abuse severity

	Sample (n = 89)	
	Adjusted Logistic Regression	
Variables	OR (95% CI)	P-Value
Physical Vulnerability		
Functional Capacity		
No limitations	-	-
One limitation	1.19 (0.20 – 7.08)	0.85
Two limitations	0.36 (0.05 – 2.49)	0.30
Age		
60 to 69	-	-
70 to 84	0.16 (0.03 – 0.76)*	0.02
85 or older	0.74 (0.14 – 3.92)	0.81
Victim-Perpetrator Relationship		
Grandchild Perpetrator		
No	-	-
Yes	11.10 (0.99 – 124.18)*	0.05
Detailed Co-Habitation		
# Co-habitants	**1.89 (1.08 – 3.32)***	**0.026**
Socio-Cultural		
Gender		
Male	-	-
Female	0.44 (0.15 – 1.29)	0.13

CI: Confidence Interval; *p ≤ 0.05, **p < 0.01, ***p < 0.001, †p < 0.10 (borderline). Referent category for multinomial regression: score = 0. The final model satisfied both the Omnibus Test of Model Coefficients (p < 0.01) and the Hosmer-Lemeshow Test (p > 0.05).

Table 37: Multivariate logistic regression model testing the effect of family co-habitation on objective physical abuse severity

	Sample (n = 89)	
	Adjusted Logistic Regression	
Variables	OR (95% CI)	P-Value
Physical Functioning		
Functional Capacity		
No limitations	-	-
One limitation	1.49 (0.26 – 8.67)	0.66
Two limitations	0.43 (0.07 – 2.57)	0.35
Age		
60 to 69	-	-
70 to 84	0.15 (0.03 – 0.72)*	0.02
85 or older	0.82 (0.16 – 4.06)	0.80
Detailed Co-Habitation		
Family Co-habitation		
Lives alone	**-**	**-**
Lives with family only	**2.07 (0.60 – 7.20)**	**0.25**
Other	**2.47 (0.29 – 20.94)**	**0.41**
Victim-Perpetrator Relationship		
Grandchild Perpetrator		
No	-	-
Yes	10.06 (0.99 – 102.18)*	0.05
Socio-Cultural		
Gender		
Male	-	-
Female	0.45 (0.16 – 1.27)	0.13

CI: Confidence Interval; *$p \leq 0.05$, **$p < 0.01$, ***$p < 0.001$, †$p < 0.10$ (borderline). The final model satisfied both the Omnibus Test of Model Coefficients ($p < 0.01$) and the Hosmer-Lemeshow Test ($p > 0.05$).

Table 38: Multivariate logistic regression model testing the effect of specified perpetrator/non-perpetrator co-habitation on objective physical abuse severity

	Sample (n = 89)	
	Adjusted Logistic Regression	
Variables	OR (95% CI)	P-Value
Physical Vulnerability		
Functional Capacity		
No limitations	-	-
One limitation	1.66 (0.25 – 11.13)	0.60
Two limitations	0.43 (0.07 – 2.57)	0.46
Age		
60 to 69	-	-
70 to 84	0.13 (0.03 – 0.67)*	0.02
85 or older	0.76 (0.15 – 3.85)	0.76
Victim-Perpetrator Relationship		
Grandchild Perpetrator		
No	-	-
Yes	10.39 (0.93 – 116.85)†	0.058
Detailed Co-Habitation		
Perpetrator/Non-perpetrator Co-habitation (specified)		
Lives alone	**-**	**-**
Lives alone w/ perpetrator	**3.87 (1.00 – 14.93)***	**0.049**
Lives w/ perpetrator and non-perpetrator others	**0.73 (0.08 – 6.67)**	**0.78**
Lives only w/ non-perpetrators	**1.81 (0.41 – 7.95)**	**0.43**
Socio-Cultural		
Gender		
Male	-	-
Female	0.36 (0.12 – 1.11)†	0.13

CI: Confidence Interval; *$p \leq 0.05$, **$p < 0.01$, ***$p < 0.001$, †$p < 0.10$ (borderline). The final model satisfied both the Omnibus Test of Model Coefficients ($p < 0.01$) and the Hosmer-Lemeshow Test ($p > 0.05$).

An increasing number of co-habitants was associated with significantly higher odds that an older adult experienced more objectively severe physical abuse (OR: 1.89, CI: 1.08 – 3.32). Perpetrator co-habitation was associated with significantly higher odds of more severe physical abuse when the older adult lived alone with the perpetrator (OR: 3.87, CI: 1.00 – 14.93). The significant effect of perpetrator co-habitation on objective physical abuse severity was lost when non-perpetrator others were present.

Neglect

Table 39 (Appendix C, p. 155) presents the bivariate tests and unadjusted logistic regression models exploring preliminary individual relationships between detailed cohabitation dynamic independent variables and neglect objective severity. None of the co-habitation variables reached significance in bivariate/unadjusted analysis and, therefore, could not inform the selection of co-habitation variables to examine in a multivariate context. The importance of family, perpetrator and inter-generational dynamics in understanding EA outcomes prompted exploration of the following co-habitation variables in multivariate analysis: family co-habitation, perpetrator co-habitation, spousal co-habitation, child co-habitation, and grandchild co-habitation. Each co-habitation variable was separately entered into the final multivariate regression model predicting objective neglect severity above (Table 28), substituting the general co-habitation status independent variable. Consistent with bivariate/unadjusted analysis, none of the co-habitation variables demonstrated significance in multivariate analysis (tables available upon request).

Subjective Severity – Aim 3a: To explore factors associated with the subjective severity of emotional abuse, physical abuse and neglect among mistreated, community-dwelling, cognitively intact older adults.

Exploratory Questions 3a: Among older adults who have experienced EA, which victim physical vulnerability (physical health, functional capacity, age), victim-perpetrator relationship (relationship type, victim dependence on perpetrator), general co-habitation (living arrangement, marital status), and socio-cultural (gender, socio-economic status, education, race/ethnicity, English language ability, urban/rural context) factors are

associated with the victim's subjective perception of severity of emotional abuse, physical abuse and neglect?

Emotional Abuse

After removing the "very serious" restriction necessary to reach one-year incidence on the EA1 (spite) and EA2 (insult/swear) emotional abuse survey items, a sub-sample of n = 123 was available to explore subjective emotional abuse severity. Figure 4 illustrates a fairly even distribution of respondents across the ordinal subjective severity categories [not serious: n = 43 (35%); somewhat serious: n = 33 (27%); very serious: n = 47 (38%)].

Figure 4: Respondent frequency distribution across emotional abuse subjective severity categories

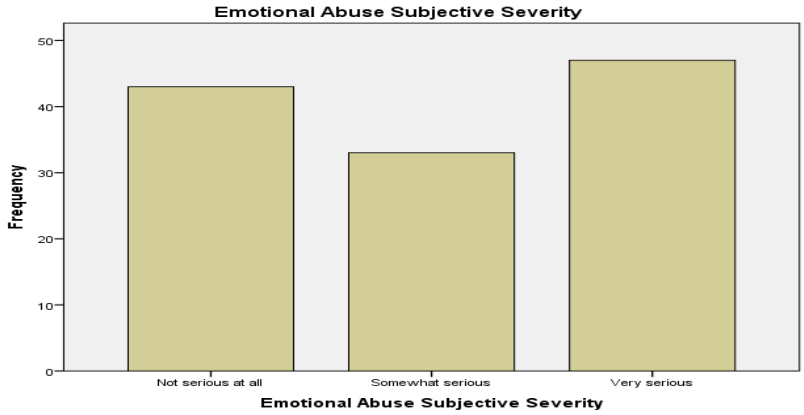


Table 40 (Appendix B, p. 130) presents results from the bivariate tests to determine if differences existed between proxy and non-proxy interviews. Older adults represented by a proxy interview had greater functional impairment, higher age, and poorer health. They were also more likely to be of American Indian, Aleut, Eskimo, Asian or Pacific Islander background. Given these significant differences, proxy status was controlled for in subsequent multivariate analysis.

Table 41 (Appendix C, p. 157) shows results from the bivariate tests and unadjusted ordinal regression to explore preliminary, individual relationships between independent variables

and emotional abuse subjective severity. Only general living arrangement reached significance in bivariate/unadjusted analysis. Functional capacity, education, and objective severity reached borderline significance.

To ensure representation across each of the dissertation conceptual model dimensions in multivariate analysis, independent variables reaching either significance or borderline significance in bivariate/unadjusted analysis were entered simultaneously into a final model. None of the victim-perpetrator relationship variables reached borderline significance in bivariate/unadjusted analysis. The family/non-family victim-perpetrator relationship type variable represented a general victim-perpetrator relation to control for and, therefore, was included in the final model. Collectively, independent variables in the final model had tolerance of 0.83 or above, VIF of 1.20 or below, and correlations ranging in absolute value from 0.004 to 0.39, which indicated no concern of multicollinearity. Table 42 shows results of the final multivariate ordinal regression model predicting elder emotional abuse subjective severity.

Table 42: Multivariate ordinal regression model predicting subjective emotional abuse severity

	Sample n = 123	
	Adjusted Ordinal Regression	
Variables	Estimate (95% CI)	P-Value
Functional Vulnerability		
Functional Capacity	-0.36 (-0.66 - -0.07)*	0.017
Victim-Perpetrator Relationship		
Family Status		
Non-family	-0.47 (-1.28 – 0.35)	0.26
Family	-	-
Co-Habitation		
Living Arrangement		
Alone	1.11 (0.28 – 1.94)**	0.009
Shared	-	-
Socio-Cultural		
Education		
Less than high-school	-1.34 (-2.54 – -0.13)*	0.029
High-school	-0.62 (-1.50 – 0.26)	0.17
More than high-school	-	-
Controls		
Objective Severity (cont.)	0.04 (-0.01 – 0.08)†	0.072
Proxy Status		
No	0.76 (-1.13 – 2.65)	0.43
Yes	-	-

CI: Confidence Interval; *p ≤ 0.05, **p < 0.01, ***p < 0.001, †p < 0.10 (borderline). Notes: The continuous functional capacity variable was used instead of the three-level ordinal version since the former reached borderline significance in bivariate/unadjusted analysis. The final model satisfied the Parallel Lines Test of proportional odds (p > 0.05).

As level of functional capacity/independence increases, older adult victims of emotional abuse were significantly less likely to perceive the abuse with greater seriousness (Estimate: -0.36, CI: -0.66 to -0.07). Older adult victims of emotional abuse living alone were significantly more likely to view their abuse with greater seriousness compared to victims living in a shared arrangement (Estimate: 1.11, CI: 0.28 – 0.94). Older adult victims of emotional abuse with the lowest level of education were significantly less likely to perceive their abuse with higher levels of seriousness compared to victims with the highest level of education (Estimate: -1.34, CI: -2.54 to -0.13).

Physical Abuse

The sub-sample (n = 76) of older adults who reached cut-off criteria for one-year physical abuse incidence were examined on the outcome of subjective severity. Figure 5 illustrates the distribution of cases across ordinal subjective severity categories [not serious: n = 23 (31.1%); somewhat serious: n = 20 (27.0%); very serious: n = 31 (41.9%)].

Figure 5: Frequency distribution of physical abuse cases across subjective severity categories

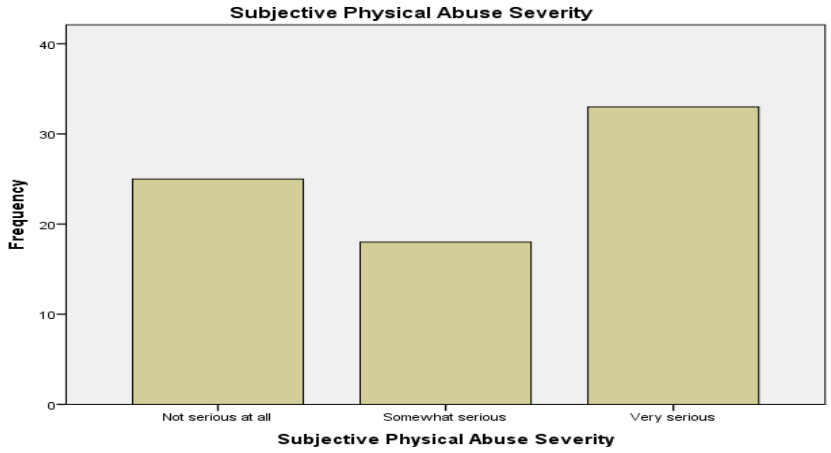


Table 43 (Appendix B, p. 131) presents results from the bivariate tests to determine if differences existed between older adults represented by proxy and non-proxy interviews. Older adults represented by proxy interviews were older and reported poorer health. These differences warranted the inclusion of proxy status as a control variable in subsequent multivariate analysis.

Table 44 (Appendix C, p. 160) shows results from the bivariate tests and unadjusted ordinal regression exploring preliminary, individual relationships between independent variables and physical abuse subjective severity. Victim age, dependence on perpetrator status, gender, and marital status were associated with subjective physical abuse severity.

Independent variables reaching significance in bivariate/unadjusted analysis were loaded simultaneously into a final multivariate ordinal regression model, along with proxy and objective

severity controls. This group of independent variables represented each of the conceptual model dimensions. Collectively, independent variables in the final model had tolerance of 0.67 or above, VIF of 1.50 or below, and correlations ranging in absolute value from 0.02 to 0.45, which indicated no concern of multicollinearity. Table 45 shows results of the final multivariate ordinal regression model predicting elder physical abuse subjective severity.

Table 45: Multivariate ordinal regression model predicting subjective physical abuse severity

	Sample n = 76	
	Adjusted Ordinal Regression	
Variables	Estimate (95% CI)	P-Value
Physical Vulnerability		
Age		
60 to 69	1.43 (-0.68 – 3.53)	0.19
70 to 84	2.16 (0.05 – 4.27)*	0.045
85+	-	-
General Co-Habitation		
Marital Status		
Separated/divorced	0.54 (-0.56 – 1.63)	0.34
Widowed/single	1.29 (0.01 – 2.57)*	0.049
Married/partnered	-	-
Victim-Perpetrator Relationship		
Victim Dependence on Perpetrator		
Yes	0.82 (-0.92 – 2.56)	0.35
No	-	-
Socio-Cultural		
Gender		
Male	-0.37 (-1.41 – 0.67)	0.49
Female	-	-
Controls		
Objective Severity (cont.)	0.09 (0.02 – 0.16*	0.015
Proxy Status		
No	-1.76 (-4.31 – 0.80)	0.18
Yes	-	-

CI: Confidence Interval; *p ≤ 0.05, **p < 0.01, ***p < 0.001, †p < 0.10 (borderline). Notes: The three-level ordinal age variable was used since it reached significance in bivariate analysis. The final model satisfied the Parallel Lines Test of proportional odds (p > 0.05).

Compared to victims of physical abuse in the oldest old group, victims in the middle age group were significantly more likely to view their abuse with greater levels of seriousness (Estimate: 2.16, CI: 0.05 – 4.27). Widowed or single victims of elder physical abuse were significantly more likely to view their abuse with greater seriousness compared to married/partnered victims (Estimate: 1.29, CI: 0.01 – 2.57). As the objective severity of physical abuse increases, older adult victims were significantly more likely to view their abuse with greater seriousness (Estimate: 0.09, CI: 0.02 – 0.16).

Neglect

The sub-sample (n = 75) of older adults who reached cut-off criteria for one-year neglect incidence were examined on the outcome of subjective severity. Figure 6 illustrates the distribution of respondents across ordinal subjective severity categories [not serious: n = 27 (35.5%); somewhat serious: n = 20 (27.0%); very serious: n = 27 (36.5%)].

Figure 6: Frequency distribution of neglect cases across subjective severity categories

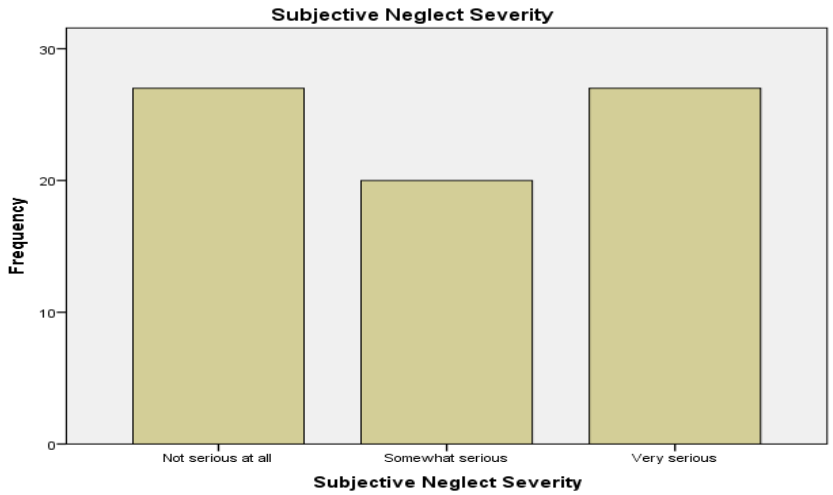


Table 46 (Appendix B, p. 132) presents results from the bivariate tests to determine proxy/non-proxy interview differences. Adults represented by proxy interviews were older and reported higher levels of functional impairment. They were also more likely to live in a rural

context. These differences warranted inclusion of proxy status as a control variable in subsequent multivariate analysis.

Table 47 (Appendix C, p. 163) shows results from the bivariate tests and unadjusted ordinal regression models exploring individual relationships between independent variables and subjective neglect severity. Functional capacity, family perpetrator status, adult child perpetrator status, paid attendant perpetrator status, geographical context, and objective severity were significantly associated with neglect subjective severity.

Independent variables reaching significance in bivariate/unadjusted analysis were loaded simultaneously into final multivariate ordinal regression, along with control variables. The victim-perpetrator relationship-type variables (family, adult child, attendant) contained a high level of collinearity and, therefore, could not be loaded together into one final model. For this reason, each victim-perpetrator relationship variable was loaded into a separate multivariate model. Gender was included in multivariate models since it reached high borderline significance ($p = 0.06$). Across the three final models – each containing a different victim-perpetrator relationship variable – independent variables had tolerance of 0.71 or above, VIF of 1.40 or below, and correlations ranging in absolute value from 0.01 to 0.40, which indicated no concern of multicollinearity. Tables 48, 49, and 50 show results of the three final multivariate ordinal regression models predicting elder neglect subjective severity with family, adult child, and attendant perpetrator relation status variables respectively.

Table 48: Multivariate ordinal regression model predicting subjective neglect severity with family status as the victim-perpetrator relationship variable.

	Sample n = 75	
	Adjusted Ordinal Regression	
Variables	Estimate (95% CI)	P-Value
Physical Vulnerability		
Functional Capacity	-0.28 (-0.65 - -0.08)	0.13
Victim-Perpetrator Relationship		
Family Perpetrator		
No	-	-
Yes	-2.13 (-3.30 – -0.96)***	<0.001
General Co-Habitation		
Living Arrangement		
Alone	1.16 (0.00 – 2.33)*	0.05
Shared	-	-
Socio-Cultural		
Gender		
Male	1.38 (0.17 – 2.59)*	0.026
Female	-	-
Geographical Context		
Rural	0.65 (-1.61 – 2.91)	0.57
Suburban	-0.89 (-2.06 – 0.27)	0.13
Urban	-	-
Controls		
Objective Severity	0.08 (0.01 – 0.15)*	0.027
Proxy Status		
No	0.51 (-1.34 – 2.37)	0.59
Yes	-	-

CI: Confidence Interval; *p ≤ 0.05, **p < 0.01, ***p < 0.001, †p < 0.10 (borderline). Notes: The continuous functional capacity variable was used instead of the three-level ordinal version since the former reached stronger significance in bivariate analysis and captured full variation of the construct. The final model satisfied the Parallel Lines Test of proportional odds (p > 0.05).

Table 49: Multivariate ordinal regression model predicting subjective neglect severity with adult child status as the victim-perpetrator relationship variable.

	Sample n = 75	
	Adjusted Ordinal Regression	
Variables	Estimate (95% CI)	P-Value
Physical Vulnerability		
Functional Capacity	-0.46 (-0.82 - -0.11)*	0.01
Victim-Perpetrator Relationship		
Adult child perpetrator		
No	-	-
Yes	-1.21 (-2.31 – -0.10)*	0.032
General Co-Habitation		
Living Arrangement		
Alone	1.48 (0.36 – 2.60)*	0.01
Shared	-	-
Socio-Cultural		
Gender		
Male	1.05 (-0.09 – 2.19)†	0.07
Female	-	-
Geographical Context		
Rural	0.63 (-1.49 – 2.74)	0.56
Suburban	-1.03 (-2.17 – 0.12)†	0.08
Urban	-	-
Controls		
Objective Severity	0.07 (0.00 – 0.14)*	0.05
Proxy Status		
No	0.68 (-1.11 – 2.47)	0.46
Yes	-	-

CI: Confidence Interval; *$p \leq 0.05$, **$p < 0.01$, ***$p < 0.001$, †$p < 0.10$ (borderline). Notes: The continuous functional capacity variable was used instead of the three-level ordinal version since the former reached stronger significance in bivariate analysis and captured full variation of the construct. Final model satisfied the Parallel Lines Test of proportional odds ($p > 0.05$).

Table 50: Multivariate ordinal regression model predicting subjective neglect severity with paid attendant status as the victim-perpetrator relationship variable.

	Sample n = 75	
	Adjusted Ordinal Regression	
Variables	Estimate (95% CI)	P-Value
Physical Vulnerability		
Functional Capacity	-0.25 (-0.61 – 0.12)	0.19
Victim-Perpetrator Relationship		
Attendant perpetrator		
No	-	-
Yes	1.71 (0.42 – 3.00)**	0.009
General Co-Habitation		
Living Arrangement		
Alone	1.30 (0.18 – 2.43)*	0.023
Shared	-	-
Socio-Cultural		
Gender		
Male	1.14 (0.01 – 2.27)*	0.048
Female	-	-
Geographical Context		
Rural	0.50 (-1.69 – 2.69)	0.66
Suburban	-1.08 (-2.24 – 0.08)†	0.068
Urban	-	-
Controls		
Objective Severity	0.07 (0.00 – 0.14)*	0.045
Proxy Status		
No	0.15 (-1.62 – 1.92)	0.87
Yes	-	-

CI: Confidence Interval; *$p \leq 0.05$, **$p < 0.01$, ***$p < 0.001$, †$p < 0.10$ (borderline). Notes: The continuous functional capacity variable was used instead of the three-level ordinal version since the former reached stronger significance in bivariate analysis and captured full variation of the construct. Final model satisfied the Parallel Lines Test of proportional odds ($p > 0.05$).

As functional capacity/independence increases, elder neglect victims were significantly less likely to perceive their neglect with greater seriousness (adult child perpetrator model – Estimate: -0.46, CI: -0.82 to -0.11). Victims of elder neglect living alone were significantly more likely to perceive their neglect with greater seriousness than victims living in a shared arrangement (family perpetrator model – Estimate: 1.16, CI: 0.00 – 2.33; adult child perpetrator model – Estimate: 1.37, CI: 0.27 – 2.47; attendant perpetrator model – Estimate: 1.20, CI: 0.09 –

2.31). Male victims of elder neglect were significantly more likely than female victims to view the neglect with greater seriousness (family perpetrator model – Estimate: 1.38, CI: 0.17 – 2.59; attendant perpetrator model – Estimate: 1.14, CI: 0.01 – 2.27). As the objective severity of elder neglect increases, the victim is significantly more likely to view the neglect as more serious (family perpetrator model – Estimate: 0.08, CI: 0.01 – 0.15; adult child perpetrator model – Estimate: 0.07, CI: 0.00 – 0.14; attendant perpetrator model – Estimate: 0.07, CI: 0.00 – 0.14).

Finally, all three victim-perpetrator relationship types remained significant in final models. Elder victims with a family-member perpetrator were significantly less likely to perceive their neglect with greater seriousness (Estimate: -2.13, CI: -3.30 to -0.96). In particular, victims were less likely to view neglect as serious when the perpetrator was an adult child (Estimate: -1.21, CI: -2.31 to -0.10). Conversely, elder victims were significantly more likely to perceive neglect with greater seriousness when the perpetrator was a paid attendant (Estimate: 1.71, CI: 0.42 – 3.00).

Subjective Severity – Aim 3b: To further explore home environment co-habitation dynamics (beyond general co-habitation status) associated with the subjective severity of emotional abuse, physical abuse and neglect.

Exploratory Questions 3b: Among older adults who have experienced EA, which of the following detailed co-habitation dynamics are associated with the victim's subjective perception of severity of emotional abuse, physical abuse, and neglect: number of co-habitants, number of co-habitants over age 60, level of family-member co-habitation, level of perpetrator co-habitation, level of non-perpetrator co-habitation, and co-habitant relationship type (spouse/partner, children, in-law children, grandchildren, other relatives, friends, paid attendant, other non-relatives).

Emotional Abuse

Table 51 (Appendix C, p. 166) shows results from the bivariate tests and unadjusted ordinal regression models exploring preliminary relationships between detailed cohabitation dynamic independent variables and subjective emotional abuse severity. Results show that number of co-habitants, family co-habitation status, and perpetrator/non-perpetrator co-habitation (specified) status were significantly related to emotional abuse subjective severity.

The detailed co-habitation variables reaching significance in bivariate/unadjusted analyses were separately entered into the final multivariate model above (Table 42) predicting subjective emotional abuse severity, substituting the general co-habitation independent variable. Results of the separate multivariate models regressing subjective emotional abuse severity on number of co-habitants, family co-habitation status, and perpetrator/non-perpetrator co-habitation (specified) status are shown in Tables 52 to 54.

Table 52: Multivariate ordinal regression model testing the effect of the number of co-habitants on subjective emotional abuse severity

	Sample n = 123	
	Adjusted Ordinal Regression	
Variables	Estimate (95% CI)	P-Value
Physical Vulnerability		
Functional Capacity	-0.36 (-0.66 - -0.06)*	0.02
Victim-Perpetrator Relationship		
Family Status		
Non-family	-0.30 (-1.10 – 0.50)	0.46
Family	-	-
Detailed Co-Habitation		
Number Co-Habitants	**-0.42 (-0.81 – -0.03)***	**0.034**
Socio-Cultural		
Education		
Less than high-school	-1.16 (-2.37 – -0.05)†	0.063
High-school	-0.62 (-1.50 – 0.26)	0.15
More than high-school	-	-
Controls		
Objective Severity (cont.)	0.03 (-0.01 – 0.07)	0.13
Proxy Status		
No	0.71 (-1.28 – 2.70)	0.48
Yes	-	-

CI: Confidence Interval; *$p \leq 0.05$, **$p < 0.01$, ***$p < 0.001$, †$p < 0.10$ (borderline). The final model satisfied the Parallel Lines Test of proportional odds ($p > 0.05$).

Table 53: Multivariate ordinal regression model testing the effect of family co-habitation on subjective emotional abuse severity

	Sample n = 123	
	Adjusted	
Variables	Estimate (95% CI)	P-Value
Physical Vulnerability		
Functional Capacity	-0.38 (-0.66 - -0.06)*	0.018
Victim-Perpetrator Relationship		
Family Status		
Non-family	-0.45 (-1.27 – 0.38)	0.29
Family	-	-
Detailed Co-Habitation		
Live with Family/Non-Family		
Lives alone	**-**	**-**
Lives w/ family only	**-1.11 (-1.93 – -0.29)****	**0.008**
Lives w/ family and non-family	**-3.38 (-6.76 – 0.0)***	**0.05**
Lives w/ non-family only	**-1.17 (-3.21 – 0.87)**	**0.26**
Socio-Cultural		
Education		
Less than high-school	-1.27 (-2.53 – -0.003)*	0.049
High-school	-0.61 (-1.51 – 0.29)	0.19
More than high-school	-	-
Controls		
Objective Severity (cont.)	0.04 (-0.01 – 0.08)†	0.059
Proxy Status		
No	0.07 (-2.07 – 2.22)	0.95
Yes	-	-

CI: Confidence Interval; *$p \leq 0.05$, **$p < 0.01$, ***$p < 0.001$, †$p < 0.10$ (borderline). The final model satisfied the Parallel Lines Test of proportional odds ($p > 0.05$).

Table 54: Multivariate ordinal regression model testing the effect of specified perpetrator/non-perpetrator co-habitation on subjective emotional abuse severity

	Sample n = 123	
	Adjusted Ordinal Regression	
Variables	Estimate (95% CI)	P-Value
Physical Vulnerability		
Functional Capacity	-0.37 (-0.66 - -0.06)*	0.018
Victim-Perpetrator Relationship		
Family Status		
Non-family	-0.61 (-1.47 – 0.25)	0.16
Family	-	-
Detailed Co-Habitation		
Perpetrator/Non-perpetrator Co-habitation (specified)		
Lives alone	**-**	**-**
Lives alone w/ perpetrator	**-1.05 (-1.99 – -0.12)***	**0.027**
Lives w/ perpetrator and non-perpetrator others	**-2.13 (-3.60 – -0.66)****	**0.005**
Lives only w/ non-perpetrators	**-0.68 (-1.68 – 0.32)**	**0.18**
Socio-Cultural		
Education		
Less than high-school	-1.34 (-2.56 – -0.11)*	0.032
High-school	-0.63 (-1.53 – 0.27)	0.17
More than high-school	-	-
Controls		
Objective Severity (cont.)	0.04 (-0.01 – 0.08)†	0.077
Proxy Status		
No	0.48 (-1.60 – 2.55)	0.65
Yes	-	-

CI: Confidence Interval; *p ≤ 0.05, **p < 0.01, ***p < 0.001, †p < 0.10 (borderline). The final model satisfied the Parallel Lines Test of proportional odds (p > 0.05).

As number of co-habitants increases, elder emotional abuse victims were significantly less likely to perceive the abuse with greater seriousness (Estimate: -0.42, CI: -0.81 to -0.03). Older adult victims were significantly less likely to view emotional abuse as serious when they lived with family only (Estimate: -1.11, CI: -1.93 to -0.29) or family plus others (Estimate: -3.38, CI: -6.76 – 0.0). The significant effect of co-habitation was lost among victims living with non-family members only. Elder victims of emotional abuse living with the perpetrator alone

(Estimate: -1.05, CI: -1.99 to -0.12) or with the perpetrator plus others (Estimate: -2.13, CI: -3.60 to -0.66) were significantly less likely to view the abuse with greater seriousness.

Physical Abuse

Table 55 (Appendix C, p. 168) shows results from the bivariate tests and unadjusted ordinal regression models exploring preliminary relationships between detailed cohabitation dynamic independent variables and subjective physical abuse severity. Results show that only perpetrator co-habitation status (general) was significantly related to physical abuse subjective severity.

Perpetrator co-habitation (general) was entered into the final multivariate model above (Table 45) predicting subjective physical abuse severity, substituting the general co-habitation independent variable. Results from the multivariate model regressing subjective physical abuse severity on perpetrator co-habitation (general) are shown in Table 56.

Table 56: Multivariate ordinal regression model testing the effect of general perpetrator co-habitation on subjective physical abuse severity

	Sample n = 76	
	Adjusted Ordinal Regression	
Variables	Estimate (95% CI)	P-Value
Physical Vulnerability		
Age		
60 to 69	1.35 (-0.76 – 3.46)	0.20
70 to 84	2.02 (-0.12 – 4.15)†	0.06
85+	-	-
Victim-Perpetrator Relationship		
Victim Dependence on Perpetrator		
Yes		
No	0.57 (-1.19 – 2.30)	0.52
	-	-
Detailed Co-Habitation		
Perpetrator Co-habitation		
No	**-**	**-**
Yes	**-1.20 (-2.24 – -0.15)***	**0.025**
Socio-Cultural		
Gender		
Male	-0.77 (-1.89 – 0.31)	0.16
Female	-	-
Controls		
Objective Severity (cont.)	0.10 (0.02 – 0.17)*	0.011
Proxy Status		
No	-1.40 (-4.11 – 1.31)	0.31
Yes	-	-

CI: Confidence Interval; *p ≤ 0.05, **p < 0.01, ***p < 0.001, †p < 0.10 (borderline). The final model satisfied the Parallel Lines Test of proportional odds (p > 0.05).

Elder victims of physical abuse who lived with their perpetrator were significantly less likely to perceive their abuse with greater seriousness (Estimate: -1.20, CI: -2.24 to -0.15) compared to victims who did not live with the perpetrator.

Neglect

Table 57 (Appendix C, p. 170) shows results from the bivariate tests and unadjusted ordinal regression models exploring preliminary relationships between detailed cohabitation dynamic independent variables and subjective neglect severity. Results show that perpetrator co-

habitation (general), perpetrator/non-perpetrator co-habitation (specified), and grandchild co-habitation were significantly related to subjective neglect severity.

Co-habitation variables reaching significance in the bivariate/unadjusted analysis were separately entered into the final multivariate model above (Table 48) predicting subjective neglect severity, substituting the general co-habitation independent variable. Results from the multivariate models regressing subjective neglect severity on perpetrator co-habitation (general), perpetrator/non-perpetrator co-habitation (specified), and grandchild co-habitation are shown in Tables 58, 59, and 60 respectively.

Table 58: Multivariate ordinal regression model testing the effect of perpetrator co-habitation (general) on subjective neglect severity

	Sample n = 75	
	Adjusted Ordinal Regression	
Variables	Estimate (95% CI)	P-Value
Physical Vulnerability		
Functional Capacity	-0.18 (-0.55 - 0.19)	0.34
Victim-Perpetrator Relationship[a]	-	-
Detailed Co-Habitation		
Perpetrator Co-Habitation (General)		
No	**-**	**-**
Yes	**-2.20 (-3.47 – -0.93)****	**0.001**
Socio-Cultural		
Gender		
Male	1.36 (0.15 – 2.56)*	0.027
Female	-	-
Geographical Context		
Rural	0.75 (-1.37 – 2.87)	0.49
Suburban	-1.09 (-2.20 – -0.02)†	0.055
Urban	-	-
Control		
Objective Severity	0.08 (0.01 – 0.14)*	0.021
Proxy Status		
No	-0.08 (-1.82 – 1.66)	0.93
Yes	-	-

CI: Confidence Interval; *p ≤ 0.05, **p < 0.01, ***p < 0.001, †p < 0.10 (borderline). The final model satisfied the Parallel Lines Test of proportional odds (p > 0.05).
a. To avoid risk of multicollinearity, the victim-perpetrator family status relationship variable was omitted from the model since it demonstrated high correlation (0.60) with the primary independent variable of interest (perpetrator co-habitation).

Table 59: Multivariate ordinal regression model testing the effect of perpetrator/non-perpetrator co-habitation (specified) on subjective neglect severity

	Sample n = 75	
	Adjusted Ordinal Regression	
Variables	Estimate (95% CI)	P-Value
Physical Vulnerability		
Functional Capacity	-0.22 (-0.61 – 0.17)	0.26
Victim-Perpetrator Relationship[a]	-	-
Detailed Co-Habitation		
Perpetrator/Non-perpetrator Co-habitation (specified)		
Lives alone	**-**	**-**
Lives alone w/ perpetrator	**-2.36 (-3.97 – -0.75)****	**0.004**
Lives w/ perpetrator and non-perpetrator others	**-2.27 (-3.85 - -0.70)****	**0.005**
Lives only w/ non-perpetrators	**-0.44 (-1.80 – 0.91)**	**0.52**
Socio-Cultural		
Gender		
Male	1.38 (0.17 – 2.60)*	0.026
Female	-	-
Geographical Context		
Rural	0.73 (-1.41 – 2.87)	0.50
Suburban	-1.13 (-2.26 – -0.01)*	0.048
Urban	-	-
Controls		
Objective Severity	0.08 (0.01 – 0.14)*	0.022
Proxy Status		
No	-0.10 (-1.88 – 1.69)	0.92
Yes	-	-

CI: Confidence Interval; *p ≤ 0.05, **p < 0.01, ***p < 0.001, †p < 0.10 (borderline). The final model satisfied the Parallel Lines Test of proportional odds (p > 0.05).

a. To avoid risk of multicollinearity, the victim-perpetrator family status relationship variable was omitted from the model since it demonstrated high correlation (0.60) with the primary independent variable of interest (perpetrator co-habitation).

Table 60: Multivariate ordinal regression model testing the effect of grandchild co-habitation on subjective neglect severity

	Sample n = 75	
	Adjusted Ordinal Regression	
Variables	Estimate (95% CI)	P-Value
Physical Vulnerability		
Functional Capacity	-0.30 (-0.67 - -0.06)	0.14
Victim-Perpetrator Relationship		
Family Status		
Family	-	-
Non-family	2.10 (0.98 – 3.23)***	<0.001
Detailed Co-Habitation		
Grandchild Co-Habitation		
No	**1.22 (-0.56 – 3.00)**	**0.14**
Yes	**-**	**-**
Socio-Cultural		
Gender		
Male	0.90 (-0.23 – 2.03)	0.13
Female	-	-
Geographical Context		
Rural	0.68 (-1.41 – 2.76)	0.66
Suburban	-0.78 (-1.88 – 0.32)	0.21
Urban	-	-
Controls		
Objective Severity	0.07 (0.002 – 0.14)*	0.023
Proxy Status		
No	0.63 (-1.14 – 2.39)	0.47
Yes	-	-

CI: Confidence Interval; *p ≤ 0.05, **p < 0.01, ***p < 0.001, †p < 0.10 (borderline). The final model satisfied the Parallel Lines Test of proportional odds (p > 0.05).

Elder neglect victims who lived with their perpetrator were significantly less likely to perceive the neglect with greater seriousness (Estimate: -2.20, CI: -3.47 to -0.93) compared to victims who did not live with their perpetrator. More specified analysis revealed that perpetrator co-habitation was associated with lower victim perceptions of seriousness regardless of whether the victim lived alone with the perpetrator (Estimate: -2.36, CI: -3.97 to -0.75) or with the perpetrator plus others (Estimate: -2.27, CI: -3.85 to -0.70).

Discussion

This dissertation used NYSEAPS data to identify candidate risk factors of one-year incidence, objective severity, and subjective severity for elder emotional abuse, physical abuse, and neglect among cognitively intact, community-dwelling older adults. Analysis focused on older adult physical vulnerability, victim-perpetrator relationship dynamics, home environment co-habitation dynamics, and socio-cultural characteristics as domains of potential EA risk factors. In accordance with EA risk factor theory (NRC, 2003), these domains represented several ecological levels of influence attached to the individual victim, victim-perpetrator relationship, living environment, and surrounding socio-cultural context.

One-Year Incidence

One-year incidence reflected the presence of abuse or neglect within the past year. Established instruments were adapted to detect EA behaviors and meaningful cut-off criteria discriminated positive cases. An identical set of risk factors predicted elder emotional and physical abuse incidences. In both cases, abuse was associated with older adult functional capacity, age, marital status, household income, and education level. Positive emotional and physical abuse incidence outcomes intersected on only 28 (36.36%) respondents, suggesting that the matching sets of risk factors emerged from a similar latent risk profile, not simply an extension of overlapping cases.

Elder neglect incidence demonstrated a divergent set of risk factors. Although age and marital status predicted all three EA types, neglect risk was uniquely represented by self-reported health status, poverty status, race/ethnicity, and geographical context. Divergent risk profiles predicting abuse (emotional/physical) and neglect may have reflected a fundamental difference between overt acts (abuse) and omissions (neglect). The EA risk factor literature has struggled to

develop separate theoretical risk models for different types of EA. Findings from this dissertation indicate that emotional and physical abuse could be represented by one risk model, while the distinct risk profile underlying neglect justifies its own theoretical representation.

Physical Vulnerability

EA discourse argues that older adults with greater functional and health impairment have diminished ability to defend themselves or escape potential mistreatment situations (NRC, 2003). EA theory proposes that physical vulnerability precipitates unbalanced social exchange, situational stress, and/or ability-related discrimination (Glendenning, 1993; Schiamberg & Gans, 1999). Despite a strong rationale for physical vulnerability as an EA risk factor, earlier studies either failed to find support or revealed conflicting findings (Lacks & Pillemer, 2004; NRC, 2003). Recent population-based EA research found functional impairment as predictive of emotional abuse and financial exploitation (Acierno et al., 2010; Laumann et al., 2008); however, standardized instruments were not used to measure ADL/IADL limitations and functional capacity was not examined in relation to physical abuse or neglect. The present dissertation addressed these methodological limitations in previous studies.

Dissertation hypotheses relating physical vulnerability to EA risk were partially supported. Older adults with greater functional impairment were at increased risk of emotional and physical abuse. Functional capacity failed to demonstrate statistical relevance in relation to neglect. Conversely, poor self-reported health predicted elder neglect but was not relevant to emotional and physical abuse. The importance of functional impairment to emotional and physical abuse may reflect power dynamics underlying these forms of EA. Emotional and physical abuse represent overt acts of power and control that one person exerts over another.

Such acts are more amenable to individuals who are functionally powerless to defend themselves or retaliate. The lack of support for functional incapacity as a risk factor for neglect was surprising since a higher number of ADL/IADL impairments would provide greater opportunity for unmet needs. Consistent with other studies (Acierno et al., 2010; Amstadter et al., 2011; Pillemer & Finkelhor, 1988), however, neglect was related to a self-perceived health attribution rather than an objectively measured level of functioning. A responsible caregiver may be more likely to neglect if he/she senses that the older adult has a low perception of self. Neglect may also occur as a way to save economic resources when an older adult has declining health status.

Age emerged as a risk factor for all three EA-types. EA theory conceptualizes abuse and neglect as intrinsically connected to increased age-associated vulnerability (NRC, 2003). After controlling for specific vulnerabilities (functional capacity, health status), however, age was independently negatively associated with EA incidence – higher age predicted a lower likelihood of abuse and neglect. Although incongruent with hypotheses and theoretical expectations, the negative age association was consistent with findings from other recent population-based EA studies (Acierno et al., 2010; Laumann et al., 2008). This dissertation builds on previous studies by isolating the effect of the oldest-old age group as a distinct independent variable – previous studies either excluded the oldest old (Laumann et al., 2008) or used a dichotomous age operationalization ($<75/\geq75$) that diluted effects of the oldest-old group (Acierno et al., 2010).

The consistency of age as negatively associated with EA across multiple population-based studies warrants re-thinking our understanding of this risk factor. Why do young-old adults have greater EA risk than old-old adults? One argument is that the oldest old are less likely to have a living spouse and, therefore, less likely to experience abuse in the context of marriage. However, across all EA types, being married or partnered was associated with the lowest odds of

abuse or neglect. Another argument is that old-old adults are integrated into a larger system of professional support (e.g., doctors, social workers, community services) to assist with aging-associated needs; this professional support system may provide protective social deterrence and surveillance against EA. However, older adults with poorer functional or health status – and likely a larger professional support system – were at increased risk of EA. Alternatively, old-old adults may experience less EA because of shifting priorities. Socio-emotional selectivity theory states that old-old adults experience a shrinking time horizon and, therefore, become increasingly selective in how they expend limited socio-emotional resources (Carstensen, Isaacowitz, & Charles, 1999). Old-old adults may become less likely to experience EA because of a greater motivation to avoid such destructive scenarios and focus on more positive, emotionally meaningful social interactions.

Alternatively, the counter-intuitive direction of age-related risk may reflect sampling or reporting bias rather than a true risk association. First, impaired old-old adults with the highest risk of EA may not be eligible for sampling in community-based studies if they are already living in institutional settings. Second, age-related findings may be confounded by cohort effects in that older adults are less likely to disclose personal problems and interpersonal violence than younger adults (Acierno, 2003). Using a life-course perspective, the oldest-old generation lived through historical, socio-cultural norms that kept interpersonal violence highly private, personal and shameful. Third, old-old adults, in particular, may fear institutionalization and loss of freedom if EA is disclosed. Finally, it is possible that old-old adults under-reported EA due to higher levels of confusion, fatigue, or medication side-effects affecting recall (Acierno, 2003). Further research is required to determine whether younger age is indeed an EA risk factor or the oldest old are simply less likely to report on issues of abuse and neglect.

General Co-Habitation

The prevailing assumption that shared living is an EA risk factor was not supported in this dissertation. Across all EA types, older adults living in a shared arrangement did not differ from older adults living alone with respect to EA in the past year. Previous studies supporting shared living as a risk factor were limited by unadjusted, bivariate statistical analysis (Pillemer & Finkelhor, 1988) or used protective service agency records to identify cases of undifferentiated EA (Lachs et al., 1997). Recent population-based studies using random sampling did not examine shared living as a potential EA risk factor. Other research has found that shared living elevates EA risk among older adults with dementia (NRC, 2003). The NYSEAPS excluded older adults with cognitive impairment; therefore, it is possible that shared living is not relevant to cognitively intact seniors in particular. Further population-based EA research that includes cognitively impaired older adults is needed to fully understand the link between co-habitation and EA incidence.

Marital status was used as another general co-habitation variable since 97% of married or partnered older adults lived in a shared arrangement. A divorced/separated marital status emerged as a risk factor for all three EA types. Counter to co-habitation hypotheses, married/partnered older adults had the lowest odds of abuse. Similarly, in the detailed co-habitation analysis, spousal/partner co-habitation was associated with lower odds of emotional abuse and strong borderline lower odds of physical abuse. Findings suggest that being married and living with a spouse is protective against EA. The presence of a spouse or partner in the home may deter prospective perpetrators from enacting abuse. It is likely that marriages lasting into late adulthood are protective by virtue of having overcome and survived previous challenges. On the other hand, separated/divorced older adults may be more likely to have

unstable, conflictive family relationships in general that pose greater risk for mistreatment. EA risk among separated/divorced older adults could also be a function of economic disadvantage relative to their married counterparts. Previous research relating marital status and EA risk is methodologically limited and finds mixed results; however, several studies support separation/divorce as associated with EA (Biggs et al., 2009; Brozowski & Hall, 2004; Brozowski & Hall, 2010).

Socio-Cultural Characteristics

Hypotheses relating socio-cultural disadvantage to EA incidences received partial support. As expected, lower household income was associated with increased risk of emotional and physical abuse. Similarly, older adults living below the poverty line had increased risk of neglect. Lower household income and poverty have been conceptualized as contextual or situational stressors contributing to EA (Glendenning, 1993). Stress and resentment escalate when financial resources are unavailable to meet the growing needs of an aging adult. Previous studies using agency records or clinical convenience samples found low income and poverty to be associated with undifferentiated EA (Buri et al., 2006; Fulmer et al., 2005; Lachs et al., 1997). The present dissertation extends the strength of these earlier findings using a large, representative sample and investigating each EA type separately.

Educational background demonstrated an unexpected effect on EA incidence. Older adults with the lowest levels of education had lower risk of emotional and physical abuse compared to older adults with the highest level of education. The unexpected associative direction between education level and EA has been shown in other large EA studies (Beach et al., 2010; Laumann et al., 2008). Rather than representing a true risk factor, education level likely reflects reporting bias – older adults with higher education are more likely to report abuse.

Higher education may elicit heightened awareness and willingness to acknowledge interpersonal violence. Further research is required to determine whether higher education is an EA risk factor or if it produces a higher propensity to report the issue.

Race/ethnicity emerged as a risk factor only in relation to elder neglect. Compared to the majority Caucasian group, Hispanic older adults had lower odds of neglect. Previous studies have found conflicting results regarding the effect of race/ethnicity on EA. Acierno et al. (2010) found that non-white older adults as a whole had higher odds of neglect. Laumann et al. (2008) found that African-American older adults had increased risk of financial abuse, while Latino older adults had lower odds of verbal and financial abuse. Beach et al. (2010) found that African-Americans had higher odds of financial and psychological abuse compared to non-African-Americans. In studies examining formal reports of undifferentiated EA to adult protective services, African-Americans were more likely than Whites to be represented (Lachs, Berkman, Fulmer, & Horwitz, 1994; Lachs et al., 1997). When combined with results from the present dissertation, the literature would suggest that Caucasian, African-American, and Latino older adults have divergent risk trends in relation to different types of EA. Initial trends suggest that African-American older adults have the highest odds of emotional abuse, financial abuse and undifferentiated EA. Divergent racial/ethnic risk trends highlight the need to examine groups individually instead of aggregating them into dichotomous categories. Qualitative research with victims and perpetrators from different racial/ethnic groups is required to understand divergent EA risk.

Objective Severity

This dissertation represented the first major examination of factors associated with EA objective severity. Factors accounting for EA objective severity are critical to designing interventions that alleviate the magnitude of existing cases and protecting victims from heightened risks of mortality and morbidity. A focus on severity begins to frame EA phenomena as they exist in reality along a spectrum. Objective severity was measured by summing the number of different EA-type behaviors and the frequency of each behavior.

Physical Vulnerability

Hypotheses relating functional capacity to EA-type objective severity were partially supported. As expected, older adults with higher levels of functional impairment endured more severe levels of neglect. Functional impairment was borderline associated with emotional abuse severity and unrelated to physical abuse severity. These findings contrasted one-year incidence results in which functional impairment predicted emotional and physical abuse but not neglect. Contrasting one-year incidence/objective severity findings indicate that factors important to preventing new EA cases (incidence) are not necessarily the same as those important to ameliorating the magnitude of exiting cases (severity). For neglect, level of functional impairment did not influence the likelihood of occurrence in the general population. However, once neglect was in place, problem severity worsened with greater levels of functional incapacity. If a caregiver is going to neglect, then the opportunity to severely neglect escalates with the number of care needs. More severe neglect may stem from exacerbated distributive injustice in older adult-caregiver relationships characterized by higher levels of care. Insufficient

caregiver rewards in exchange for a high output of caregiving costs would also amplify resentment and propensity for higher levels of emotional abuse severity.

Age was related to the objective severity of all three EA types. Similar to one-year incidence findings, the associative direction between age and objective EA severity was unexpected. Older adults in the youngest age group had the highest odds of enduring the most severe levels of emotional abuse, physical abuse and neglect. Similar questions remain as to whether these findings reflect true associations or sampling/reporting bias. It is possible that old-old adults are less likely to report on the full extent of the problem or that the most vulnerable old-old adults are ineligible for sampling in a community-based study. However, the consistency of this negative age relationship, even among older adults who are willing to report on abuse or neglect, warrants consideration of a true association. Younger adults may face more severe levels of abuse and neglect because they are more willing and capable of engaging in escalating conflict. Dyadic discord theory would suggest that interpersonal violence is bi-directional; it cannot be sustained unless both parties contribute to the underlying relational dynamics (Burnight & Mosqueda, 2011). Socio-emotional selectivity theory suggests that old-old adults become increasingly motivated to invest in alternative, emotionally meaningful social interactions (Carstensen et al., 1999). Old-old adults may be less willing to engage and participate in an abusive relationship at the same frequency as younger adults. Alternatively, old-old adults may experience less severe forms of abuse or neglect due to perceptions of old-age fragility. A perpetrator may restrain from frequently yelling at, hitting, or neglecting a frail elder if that old-old adult is perceived as unable to withstand the mistreatment. Severe abuse against a frail older adult is more likely to result in injury and hospitalization (Friedman, Avila, Tanouye, & Joseph, 2011). Perpetrators may reduce the intensity of EA to avoid serious consequences to

the older adult and evade a higher likelihood of legal/justice repercussions if the elder is hospitalized.

Co-Habitation

Co-habitation dynamics were important to emotional and physical abuse objective severity. Living alone without any co-habitants was associated with the lowest odds of severe abuse. Conversely, older adults living alone with their perpetrator had the highest odds of enduring the most severe levels of emotional and physical abuse. Living with non-perpetrator others played a protective role against an escalation in abuse severity – older adults who lived with the perpetrator plus non-perpetrator others or who lived only with non-perpetrator others were *not* at increased risk of severe abuse. These findings highlight the danger attached to living arrangements in which the victim and perpetrator live alone in isolation. For several reasons, elder victims are sometimes unwilling to separate from their perpetrator. Protective service agencies that push for separation against the victim's wishes can experience client attrition. Findings from this dissertation suggest that the addition of non-perpetrator others into a household with the abuser represents an alternative intervention to increase safety. In cases where the victim is willing to separate from the perpetrator but unwilling to live alone, findings indicate that re-location to live with non-perpetrator others is a potentially safe alternative. The author is unaware of other studies in the literature that have examined the specific effects of perpetrator co-habitation on EA.

Victim-Perpetrator Relationship

This dissertation was the first large-scale examination of candidate EA risk factors at the level of the victim-perpetrator relationship. EA is a relationship-level problem and, therefore,

risk and protective factors undoubtedly exist within the inter-relational dynamic. EA risk theory proposes that the victim-perpetrator relationship type must be considered and that, in particular, power imbalances and status inequality contribute to problem severity (NRC, 2003).

Hypotheses relating victim-perpetrator relationship imbalance to EA objective severity received partial support. Physical abuse was more likely to be severe when the perpetrator was a grandchild. This finding highlights victim-perpetrator generational and age difference as potentially contributing to physical abuse severity. Generation or age-related status inequality may be manifested through ageist attitudes and behaviors directed towards an older adults. Using ageism and power and control theories, Burnight and Mosqueda (2011) argue that EA can result from the power differential between young and old that entitles the younger perpetrator to mistreat an older adult.

Emotional abuse was most severe when the perpetrator was a spouse/partner (borderline significance). In the NYSEAPS, victims of severe emotional abuse with a spousal perpetrator were more likely to be male than female; therefore, the association cannot be explained by gender-based power and control relations. Alternatively, spouses may have represented the worst type of emotional abuse perpetrator because they were the most likely to be living alone with the victim. As discussed above, living alone with the perpetrator was associated with the highest odds of severe emotional abuse. This isolated living arrangement provides the spouse/partner with undeterred access to the victim and uncensored behavior. Emotional abuse was least severe when the perpetrator was a friend. Victims of emotional abuse with a friend perpetrator were most likely to be living alone or with co-habitants that excluded the perpetrator. Therefore, friend perpetrators had restricted access to the victim by living arrangement barriers. These findings highlight another example of contrasting results relating risk factors to one-year incidence and

objective severity. Older adults who were married/partnered or lived with a spouse/partner were least likely to experience EA. However, spouse/partners represented the worst type of emotional abuse perpetrator once the problem was in place.

Socio-Cultural

Few socio-cultural factors predicted abuse or neglect objective severity. As expected, older adults living in households with lower income experienced more severe levels of neglect. These households likely had insufficient economic resources to allocate towards the care of an older adult with functional needs. Compared to Caucasians, Hispanic older adults were more likely to experience higher levels of emotional abuse severity. Latino caregivers experience higher levels of contextual stressors and depressive symptoms than their White counterparts (Pinquart & Sorensen, 2005), which may contribute to an escalation in emotional abuse. Parra-Cardona, Meyer, Schiamber and Post (2007) developed a framework to conceptualize EA risk in Latino families. The authors emphasized within-family cultural identity differences as contributing to EA. Tension, conflict and mistreatment escalate when a U.S.-culturally-oriented perpetrator resents and dismisses a country-of-origin-culturally-oriented older adult who espouses traditional values. The authors also discussed Latino reluctance and distrust to engage with formal social services. A refusal to engage with formal support would limit the opportunity to alleviate EA severity. Further research is required to understand why Hispanic older adults appear to be at heightened risk for severe emotional abuse.

Subjective Severity

This dissertation represented the first examination of factors associated with EA victims' perceptions of abuse and neglect problem severity. It took an exploratory position due to the lack

of theory or research in this area. Variables associated with EA subjective severity were examined while controlling for inter-individual variation in objective severity.

Understanding EA victim help-seeking patterns is a major, ongoing challenge. Approximately 93% to 96% of EA victims living in the community do not use formal support services (Lachs & Berman, 2011; Pillemer & Finkelhor, 1988). Among older adult victims who do interface with protective service programs, 13% to 58% refuse services (Rizzo et al., 2013). Little is known about why some EA victims seek formal support and accept protective services while others remain hidden in the community or refuse services. Symbolic interactionism proposes that subjective perceptions of a problem inform cognitive scripts and planned behaviors relative to the problem (Ansello, 1996). The transtheoretical model of change suggests that perceptions of higher problem seriousness underlie greater intentions to cease problematic patterns of behavior, create new behaviors, or modify existing behaviors (DiClemente, 2005). EA research finds that older adults who perceive abuse as more serious have greater help-seeking intentions (Lee et al., 201) and demonstrate higher levels of protective service utilization (Burnes et al., 2014). Identifying determinants of victim perceptions of problem seriousness will enhance our understanding of differential victim help-seeking intentions and behaviors.

Physical Vulnerability

Functional capacity was related to perceptions of elder emotional abuse and neglect. Victims living with higher levels of functional impairment were more likely to view their emotional abuse or neglect with greater seriousness. This association is intuitive since victims with greater functional impairment have less power or control over attaining safety, defending themselves, or providing their own care. The lack of findings linking functional impairment and

physical abuse was surprising given the overt power and control dynamics and immediate danger facing victims of this EA type. Perhaps functionally impaired victims of physical abuse experience higher levels of learned helplessness that ultimately contributes to a sense of apathy to cope. Clearly, more research is needed to both replicate and understand the differential effect of functional capacity on victim perceptions of each EA type.

Unlike the earlier one-year incidence and objective severity outcomes, age was only minimally relevant to victims' perceptions of problem seriousness. Victims in the middle-old age group (70 – 84) were more likely to view their physical abuse as serious compared to victims in the oldest-old age group. Without having findings attached to the youngest-old age group, it is difficult to conclude that age is negatively associated with perceptions of physical abuse seriousness. The continuous age variable was not associated with levels of perceived seriousness. In earlier sections discussing one-year-incidence and objective severity, questions were raised as to whether unexpected age associations were a result of a true relationship or sampling/reporting bias. An absence of age findings in relation to subjective severity across all three EA types diminishes support for explanations based on reporting bias. If old-old adults *had* been less likely to perceive EA as serious, then perhaps they would also have been less likely to report on the existence or extent of the problem – this was not the case. An absence of age findings in relation to subjective EA severity lends support for a true negative age association with one-year incidence and objective severity.

Co-Habitation

Victims living in a shared arrangement were generally less likely to perceive their abuse or neglect as serious compared to victims who lived alone. Subsequent detailed co-habitation

analysis identified which co-habitation dynamics accounted for the lower levels of perceived seriousness. Across all three EA types, the presence of the perpetrator in the home contributed to lower victim perceptions of problem serious. Perpetrator co-habitation is particularly troubling because it was also associated with greater objective severity. Therefore, victims who live with their perpetrator experienced more frequent and varied forms of abuse, yet they somehow perceived the mistreatment as less serious. This scenario counters the positive association found between objective and subjective severity in general (described below). It would appear that perpetrators who lived with their victim successfully employed control tactics that minimized the seriousness of the EA situation. Living arrangement interventions that separate the victim and perpetrator (e.g., victim living alone or only with non-perpetrators) would both alleviate objective abuse severity and allow the victim to formulate mistreatment perceptions away from perpetrator influence. Findings suggest that victims living with the perpetrator are least likely to seek formal support due to lower perceptions of problem seriousness.

Victim-Perpetrator Relationship

Victim-perpetrator relationship dynamics were important to victim perceptions of neglect. Neglect victims with a family-member perpetrator were less likely to view the mistreatment as serious compared to victims with a non-family-member perpetrator. More specifically, perceptions of neglect seriousness were lowest when the perpetrator was an adult child. Conversely, neglect victims were most likely to view their mistreatment with greater seriousness when the perpetrator was a paid attendant. Victims likely perceived neglect by an attendant as more serious since these caregivers were being paid to perform a job. On the other hand, victims may have been more sympathetic towards the challenges of un-paid, informal family caregiving, particularly for adult children who are often sandwiched between generational

care responsibilities. Parents also tend to be more forgiving towards their own children. Nurturing parental instincts may have biased victim perceptions of offspring behavior. With implications for understanding help-seeking behaviors, findings suggest that neglect victims who have adult-child perpetrators may be less likely to seek or accept formal EA support. This implication is supported by social service research finding that EA victims with a child or grandchild perpetrator are least likely to pursue elder protective services (Burnes et al., 2014).

Socio-Cultural

Similar to the risk profiles underlying EA objective severity, few socio-cultural factors accounted for variation in victim perceptions of problem seriousness. Gender predicted perceptions of neglect in that male victims were more likely to view the mistreatment with greater seriousness compared to females. These differences may be rooted in long-standing, gender-based power dynamics and expectations entrenched in the family system. Having been socialized through earlier decades of pronounced patriarchal values, older men are more likely to have adopted a role of entitlement to be cared for, while older women are more likely to have internalized an expectation to care for others. Elder women may be more likely to perceive neglect as an accepted function of role imbalance, whereas older men may be more likely to view unmet care as a disruption to the status-quo.

Education was the only other socio-cultural variable to predict subjective severity. Compared to victims of elder emotional abuse with education greater than high-school, those with education below high-school were less likely to perceive the abuse with greater seriousness. It is likely that more educated victims had greater awareness of the scope and consequences of interpersonal violence and, consequently, viewed the problem as more serious.

Objective Severity

Across all three EA types, objective and subjective severity demonstrated a positive relationship. Victims enduring more intense abuse or neglect perceived their mistreatment with a higher level of seriousness. Mistreatment characterized by increasingly frequent and varied abuse or neglect behaviors is indeed more dangerous. However, this finding suggests that EA victims suffering the most severe forms of mistreatment also have the least amount of control over their situation. These victims perceive the mistreatment as serious, yet they cannot alleviate the intensity or prevent the abuse/neglect from escalating. Fortunately, victims of the most severe forms of abuse or neglect might be the most receptive to formal support since recognition of problem seriousness exists. Finding ways to identify and reach these victims who are largely hidden in the community is a major challenge for EA practitioners and policy-makers.

Significance and Implications

The NYSEAPS is the most methodologically rigorous EA prevalence study conducted to date. It built on other recent population-based EA studies (Acierno et al., 2010; Laumann et al., 2008) by framing EA phenomena with accepted EA definitional and inclusion parameters and adapting established measurement tools to assess abuse and neglect outcomes. Use of substantive cut-off criteria to define positive EA cases was an important innovation because it provided greater specificity and validity to abuse and neglect constructs. Using NYSEAPS data, this dissertation will contribute, arguably, the most valid and reliable elder emotional abuse, physical abuse and neglect risk factor knowledge available to date.

Incidence-related risk factor information carries direct implications for policy and interventions aimed at preventing new EA cases. With an aging population expected to nearly

double over the next 15 years, absolute numbers of EA incidents will dramatically increase unless targeted, primary EA prevention strategies become available. Healthcare practitioners currently under-detect at-risk older adults and public education and prevention efforts to identify vulnerable elders are not in place (Cooper, Selwood, & Livingston, 2009). Findings from this dissertation indicate that effective EA prevention will require different strategies for emotional/physical abuse and neglect respectively. Results suggested that older adults who are younger, functionally impaired, living in low-income households, separated or divorced, and do not live with a spouse or partner are at greatest risk for elder emotional and physical abuse. Older adults who are younger, separated or divorced, living below the poverty line, non-Hispanic and in poor health appear to have the highest risk for elder neglect.

This dissertation extends existing EA risk factor research as the first known study to examine factors predicting EA operationalized along a continuum of severity. Considerable variation exists in the frequency, extent, and perceived seriousness of EA, and mistreatment behaviors tend to fall along a continuum of severity. A landmark NRC report recommended that, in addition to understanding risk factors for the presence of EA in the general population, identifying factors associated with varying levels of problem severity among victims is a research priority (NRC, 2003).

A focus on factors related to objective EA severity informs the development of targeted interventions to alleviate the magnitude of existing cases and protect victims from heightened risks of mortality and morbidity. Elder protective service agencies across the country respond to tens of thousands of EA cases each year with limited research guidance to inform best practices (Pillemer et al., 2011). EA protective service caseloads are growing nationwide, cases are increasingly complex, and agencies lack the necessary information to respond appropriately

(U.S. Government Accountability Office, 2011). Clinical decisions related to triaging incoming referrals, allocating response times, formulating safety plan interventions, and/or closing cases depend upon an understanding of EA severity.

This dissertation provides information to understand mechanisms underlying escalation and amelioration of EA severity. Different risk profiles accounted for the severity of elder emotional abuse, physical abuse, and neglect respectively. Divergent risk profiles imply that EA-type-specific response protocols and intervention approaches are necessary to alleviate risk attached to different types of abuse and neglect. Severe emotional abuse was predicted by younger age, functional impairment, shared living, Hispanic ethnicity, a spousal/partner perpetrator, and living alone with the perpetrator. Higher levels of physical abuse severity were associated with younger age, a grandchild perpetrator, and living alone with the perpetrator. Severe neglect was predicted by younger age, functional impairment, and low household income. Mutable risk factors, such as living arrangement, level of functional independence and household income, can be directly targeted in interventions to alleviate EA severity. Further research is necessary to understand mechanisms of change attached to immutable factors (age, race/ethnicity, perpetrator relationship type). Different and sometimes contradictory risk findings related to one-year incidence and objective severity highlight caution against using general population risk factor information to inform the development of tertiary prevention protective interventions.

A focus on subjective severity carries indirect implications towards understanding victim help-seeking and protective service utilization patterns. The hidden nature of EA in the community remains a major challenge in the field. Victims are largely reluctant to seek formal support or pursue protective service interventions. Older adults who perceive mistreatment with

a low level of seriousness have lower levels of help-seeking intentions (Lee at al., 2011) and pursue fewer protective service interventions (Burnes et al., 2014). Findings from this dissertation help identify factors related to victims' perceptions of problem seriousness. Victim of emotional abuse were more likely to perceive the problem as serious if they were functionally impaired, highly educated or endured more objectively severe mistreatment; victims were less likely to perceive the emotional abuse as serious if they lived with family or lived with their perpetrator. Physical abuse victims had higher odds of viewing their abuse with greater seriousness if they were widowed or single (never married) or experienced more objectively severe mistreatment; victims were less likely to perceive physical abuse as serious if they lived with the perpetrator. Neglect victims reported higher perceptions of problems seriousness if they were functionally impaired, male, had a paid attendant perpetrator, or endured more objectively severe mistreatment; neglect victims had lower perceptions of problem seriousness if their perpetrator was an adult child or when they lived with the perpetrator.

Limitations

This dissertation contained several limitations and opportunities exist to build further on the EA risk factor literature. First, the cross-sectional NYSEAPS design limited causal risk factor inferences. Longitudinal designs are necessary to assess how changes in candidate risk factors over times predict future EA outcomes. Second, potentially important EA risk factors or confounders were unavailable for analysis in this dissertation. Future studies should collect more detailed data on the victim (previous trauma, mental health status, personality characteristics, objective physical health assessment, substance use), perpetrator (e.g., psychiatric/mental health status, personality characteristics, substance use, economic dependence), victim-perpetrator relationship (relationship quality, level of inter-dependence, history of interpersonal violence,

differences in gender/race), and social embeddedness (social engagement, social support, community ties) to fully understand EA risk factors.

Older adults are less likely to disclose personal problems or interpersonal violence; therefore, under-reporting bias is an implicit limitation in EA risk factor research (Acierno, 2003). Several reasons for elder under-reporting in EA research have been identified, including: a desire to protect family members; internalized sense of responsibility; denial, stigma or embarrassment; perpetrator control tactics or fear of perpetrator retaliatory mistreatment; fear of institutionalization; concern of betraying family trust; statutory reporting laws upon disclosure; and dependence upon the perpetrator economically or for daily needs (Acierno, 2003). The NYSEAPS implemented several design elements to maximize sensitivity, including use of direct telephone interviewing, prefacing mistreatment questions with contextual orientation, and assessing abuse and neglect using close-ended questions that describe multiple, specific, behaviorally-defined mistreatment events (NRC, 2003).

Non-coverage of older adults without a landline is a limitation of random digit dial sampling strategies. Only 0.7% of NYS older adults aged 65 or above lived in wireless-only households in 2009 (Blumberg & Luke, 2010; Blumberg et al., 2011). However, future studies should include wireless-only households as they become more and more prevalent among older adults. Recall and information bias may threaten the reliability of findings since older adults were asked to provide information about mistreatment events that happened in the past. Future studies should also use a one-year incidence time-frame, as opposed to the life-time EA prevalence or five-year incidence time-frames found in the literature, to help minimize recall bias. Finally, findings from this dissertation cannot necessarily be generalized beyond New York State.

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Appendix A
NYSEAPS Instrument Items

Older adults were asked survey items about the following behaviorally-defined mistreatment events. If endorsed since the age of 60, then further information was collected regarding perpetrator status, as well as frequency and self-perceived seriousness over the previous year.

Emotional Abuse (EA)

EA1: Done or said something to spite you

EA2: Insulted or sworn at you

EA3: Threatened to hit or throw something at you

Physical Abuse (PA)

PA1: Thrown something at you

PA2: Tried to slap or hit you

PA3: Pushed, grabbed or shoved you

PA4: Slapped you

PA5: Kicked, bit, or hit you with a fist

PA6: Hit or tried to hit you with something

PA7: Locked you in a room

PA8: Beat you up

PA9: Threatened you with a knife or gun

PA10: Used a knife or gun against you

PA11: Done anything violent towards you that you have not mentioned

Neglect (N)

Older adults were asked if any of the following needs had been neglected by the responsible caregiver:

N1: Shopping for groceries and clothes

N2: Preparing meals

N3: Completing routine housework that needs to be done in the home

N4: Taking medicines in the right doses and at the right times

N5: Cutting and eating food

N6: Dressing and undressing

N7: Walking

N8: Getting in and out of bed

N9: Taking a bath or shower

N10: Using the bathroom

N11: Other specific daily needs requiring assistance

Appendix B
Proxy/Non-Proxy Analysis

Table 2: Bivariate analysis to determine differences between proxy and non-proxy interviews in entire sample (n = 4156)

	Proxy Used		
Characteristic	No (n = 4000)	Yes (n = 156)	χ^2/ t-score
Gender			
Male	1418 (34.1)	58 (1.4)	0.20
Female	2582 (62.1)	98 (2.4)	
Ethnicity			
Caucasian	2894 (70.3)	111 (2.7)	15.95**
African-American	736 (17.9)	21 (0.5)	
Hispanic	237 (5.8)	13 (0.3)	
Other	96 (2.3)	11 (0.3)	
Education			
Less than high-school	477 (11.5)	37 (0.9)	27.17***
High-school	1239 (30.0)	51 (1.2)	
College	1614 (39.1)	48 (1.2)	
Post-graduate	651 (15.8)	13 (0.3)	
Household income (mean/SD)	4.49 (2.05)	4.42 (2.26)	0.38
Household income below poverty line			
No	3752 (90.3)	131 (3.2)	23.62***
Yes	248 (6.0)	25 (0.6)	
Primary Language			
English	3933 (94.6)	155 (3.7)	1.0
Spanish	67 (1.6)	1 (0)	
Geographical context			
Urban	2307 (55.6)	88 (2.1)	2.30
Suburban	1068 (25.8)	49 (1.2)	
Rural	616 (14.9)	19 (0.5)	
Functional Capacity (mean/SD)	3997 (10.66)	8.21 (3.11)	9.81***
Health			
Poor (very poor, poor, fair)	959 (23.1)	70 (1.7)	35.12***
Good (good, very good, excellent)	3038 (73.2)	86 (2.1)	
Age (mean/SD)	73.89 (8.53)	80.38 (9.44)	-9.29***
Marital Status			
Married/partnered	1889 (45.6)	69 (1.7)	5.65
Separated/divorced	503 (12.1)	12 (0.3)	
Other (widowed/single)	1596 (38.5)	75 (1.8)	
Shared Living Arrangement			
No	1560 (37.8)	13 (0.3)	60.31***
Yes	2413 (58.5)	142 (3.4)	

CI: Confidence Interval; *p ≤ 0.05, **p < 0.01, ***p < 0.001, †p < 0.10 (borderline)

Table 7: Bivariate analysis to determine differences between proxy and non-proxy interviews in sub-sample of older adults susceptible for neglect (n = 701)

	Proxy Used		
Characteristic	No (n = 607)	Yes (n = 94)	χ^2/ t-score
Gender			
Male	160 (22.8)	27 (3.9)	0.23
Female	447 (63.8)	67 (9.6)	
Ethnicity			
Caucasian	387 (55.8)	70 (10.1)	9.98*
African-American	143 (20.6)	10 (1.4)	
Hispanic	51 (7.3)	8 (1.2)	
Other	19 (2.7)	6 (0.9)	
Education			
Less than high-school	150 (21.7)	18 (2.6)	3.14
High-school	199 (28.8)	34 (4.9)	
College	177 (25.6)	29 (4.2)	
Post-graduate	77 (11.1)	7 (1.0)	
Household income (mean/SD)	3.61 (1.98)	4.02 (2.31)	-1.59
Household income below poverty line			
No	520 (74.2)	73 (10.4)	4.01*
Yes	87 (12.4)	21 (3.0)	
Primary Language			
English	581 (82.9)	93 (13.3)	2.28
Spanish	26 (3.7)	1 (0.1)	
Geographical context			
Urban	392 (56.1)	49 (7.0)	6.03*
Suburban	137 (19.6)	31 (4.4)	
Rural	76 (10.9)	14 (2.0)	
Functional Capacity (mean/SD)	8.78 (1.61)	6.39 (2.76)	8.17***
Health			
Poor (very poor, poor, fair)	347 (49.5)	59 (8.4)	1.05
Good (good, very good, excellent)	260 (37.1)	35 (5.0)	
Age (mean/SD)	77.63 (8.84)	83.18 (8.43)	-5.70***
Marital Status			
Married/partnered	193 (27.7)	27 (3.9)	1.26
Separated/divorced	74 (10.6)	58 (8.3)	
Other (widow/single)	337 (48.3)	9 (1.3)	
Shared Living Arrangement			
No	269 (38.8)	10 (1.4)	38.74***
Yes	332 (47.8)	83 (12.0)	

CI: Confidence Interval; *$p \leq 0.05$, **$p < 0.01$, ***$p < 0.001$, †$p < 0.10$ (borderline)

Table 19: Bivariate analysis to determine differences between proxy and non-proxy interviews in sub-sample of older adults susceptible for objective emotional abuse severity (n = 509)

	Proxy Used		
Characteristic	No (n = 482)	Yes (n = 27)	χ^2/ t-score
Gender			
Male	196 (38.5)	11 (2.2)	0.0
Female	286 (56.2)	16 (3.1)	
Ethnicity			
Caucasian	343 (67.8)	23 (4.5)	12.63**
African-American	95 (18.8)	0 (0)	
Hispanic	29 (5.7)	1 (0.2)	
Other	12 (2.4)	3 (0.6)	
Education			
Less than high-school	43 (8.5)	9 (1.8)	17.79***
High-school	121 (23.9)	4 (0.8)	
College	212 (41.8)	9 (1.8)	
Post-graduate	105 (20.7)	4 (0.8)	
Household income (mean/SD)	4.86 (2.15)	4.56 (2.17)	0.72
Household income below poverty line			
No	450 (88.4)	24 (4.7)	0.80
Yes	32 (6.3)	3 (0.6)	
Primary Language			
English	480 (94.3)	27 (5.3)	0.11
Spanish	2 (0.4)	0 (0)	
Geographical context			
Urban	282 (55.4)	10 (2.0)	6.36*
Suburban	128 (25.1)	13 (2.6)	
Rural	72 (14.1)	4 (0.8)	
Functional Capacity (mean/SD)	10.62 (1.05)	8.12 (3.15)	4.04***
Health			
Poor (very poor, poor, fair)	121 (23.9)	14 (2.8)	9.29**
Good (good, very good, excellent)	359 (70.8)	13 (2.6)	
Age (mean/SD)	71.31 (8.0)	81.63 (8.80)	-6.49***
Marital Status			
Married/partnered	95 (18.7)	1 (0.2)	6.60*
Separated/divorced	154 (30.3)	14 (2.8)	
Other (widowed/single)	232 (45.7)	12 (2.4)	
Living Arrangement			
Alone	161 (31.9)	1 (0.2)	10.06**
Shared	317 (62.9)	25 (5.0)	

CI: Confidence Interval; *$p \leq 0.05$, **$p < 0.01$, ***$p < 0.001$, †$p < 0.10$ (borderline)

Table 23: Bivariate analysis to determine differences between proxy and non-proxy interviews among sub-sample of older adults susceptible to objective physical abuse severity (n = 89)

	Proxy Used		
Characteristic	No (n = 83)	Yes (n = 6)	χ^2/ t-score
Gender			
Male	35 (39.3)	0 (0)	4.17*
Female	48 (53.9)	6 (6.7)	
Ethnicity			
Caucasian	54 (61.4)	4 (4.5)	3.83
African-American	22 (25.0)	1 (1.1)	
Hispanic	4 (4.5)	0 (0)	
Other	2 (2.3)	1 (1.1)	
Education			
Less than high-school	9 (10.3)	0 (0)	1.25
High-school	18 (20.7)	2 (2.3)	
More than high-school	55 (63.2)	3 (3.4)	
Household income (mean/SD)	4.19 (1.99)	3.20 (1.92)	1.08
Household income below poverty line			
No	75 (84.3)	5 (5.6)	0.30
Yes	8 (9.0)	1 (1.1)	
Primary Language			
English	83 (93.3)	6 (6.7)	n/a
Spanish	0 (0)	0 (0)	
Geographical context			
Urban	11 (12.4)	0 (0)	0.92
Suburban	13 (14.6)	1 (1.1)	
Rural	59 (66.3)	5 (5.6)	
Functional Capacity (mean/SD)	9.44 (1.40)	5.67 (3.01)	3.05*
Health			
Poor (very poor, poor, fair)	30 (33.7)	5 (5.6)	5.22*
Good (good, very good, excellent)	53 (59.6)	1 (1.1)	
Age (mean/SD)	71.19 (8.16)	81.17 (10.19)	-2.85**
Marital Status			
Married/partnered	30 (33.7)	2 (2.2)	2.43
Separated/divorced	33 (37.1)	4 (4.5)	
Other (widowed/single)	20 (22.5)	0 (0)	
Living Arrangement			
Alone	29 (33.0)	1 (1.1)	0.87
Shared	53 (60.2)	5 (5.7)	

CI: Confidence Interval; *$p \leq 0.05$, **$p < 0.01$, ***$p < 0.001$, †$p < 0.10$ (borderline)

Table 26: Bivariate analysis to determine differences between proxy and non-proxy interviews among sub-sample of older adults susceptible to objective neglect severity (n = 109)

	Proxy Used		
Characteristic	No (n = 90)	Yes (n = 19)	χ^2/ t-test
Gender			
Male	28 (25.7)	4 (3.7)	0.77
Female	62 (56.9)	15 (13.8)	
Ethnicity			
Caucasian	52 (49.1)	13 (12.3)	0.64
African-American	26 (24.5)	4 (3.8)	
Hispanic	4 (3.8)	1 (0.9)	
Other	5 (4.7)	1 (0.9)	
Education			
Less than high-school	24 (22.4)	3 (2.8)	4.19
High-school	23 (21.5)	9 (8.4)	
More than high-school	42 (39.3)	6 (5.6)	
Household income (mean/SD)	3.7 (2.10)	3.5 (2.0)	0.21
Household income below poverty line			
No	71 (65.1)	14 (12.8)	0.25
Yes	19 (17.4)	5 (4.6)	
Primary Language			
English	89 (81.7)	19 (17.4)	0.21
Spanish	1 (0.9)	0 (0)	
Geographical context			
Urban	57 (52.3)	6 (5.5)	6.51*
Suburban	26 (23.9)	10 (9.2)	
Rural	7 (6.4)	3 (2.8)	
Functional Capacity (mean/SD)	8.79 (1.41)	6.63 (2.57)	3.55**
Health			
Poor (very poor, poor, fair)	66 (60.6)	14 (12.8)	0.001
Good (good, very good, excellent)	24 (22.0)	5 (4.6)	
Age (mean/SD)	73.18 (8.24)	81.74 (10.02)	-3.96***
Marital Status			
Married/partnered	30 (27.8)	4 (3.7)	4.25
Separated/divorced	38 (35.2)	13 (12.0)	
Other (widowed/single)	21 (19.4)	2 (1.9)	
Living Arrangement			
Alone	41 (38.7)	4 (3.8)	3.63
Shared	47 (44.3)	14 (13.2)	

CI: Confidence Interval; *$p \leq 0.05$, **$p < 0.01$, ***$p < 0.001$, †$p < 0.10$ (borderline)

Table 40: Bivariate analysis to determine differences between proxy and non-proxy interviews among older adults in subjective emotional abuse severity analysis (n = 123)

	Proxy Used		
Characteristic	No (n = 117)	Yes (n = 6)	χ^2/ t-test
Gender			
Male	42 (34.1)	2 (1.6)	0.02
Female	75 (61.0)	4 (3.3)	
Ethnicity			
Caucasian	79 (64.2)	4 (3.3)	12.21**
African-American	27 (22.0)	0 (0)	
Hispanic	7 (5.7)	0 (0)	
Other	4 (3.3)	2 (1.6)	
Education			
Less than high-school	13 (10.7)	0 (0)	0.69
High-school	26 (21.3)	1 (0.8)	
More than high-school	78 (63.9)	4 (3.3)	
Household income (mean/SD)	4.54 (2.19)	3.67 (1.75)	0.96
Household income below poverty line			
No	40 (32.5)	30 (24.4)	0.37
Yes	3 (2.4)	3 (2.4)	
Primary Language			
English	n/a	n/a	n/a
Spanish			
Geographical context			
Urban	77 (62.6)	1 (0.8)	0.70
Suburban	24 (19.5)	2 (1.6)	
Rural	16 (13.0)	3 (2.4)	
Functional Capacity (mean/SD)	10.50 (1.33)	7.83 (2.04)	4.67***
Health			
Poor (very poor, poor, fair)	31 (25.4)	4 (3.3)	4.45*
Good (good, very good, excellent)	85 (69.7)	2 (1.6)	
Age (mean/SD)	70.80 (7.39)	83.67 (5.72)	-4.19***
Marital Status			
Married/partnered	21 (17.1)	13 (10.6)	17 (13.8)
Separated/divorced	6 (4.9)	8 (6.5)	12 (9.8)
Other (widowed/single)	16 (13.0)	12 (9.8)	18 (14.6)
Living Arrangement			
Alone	38 (31.1)	0 (0)	2.86†
Shared	78 (63.9)	6 (4.9)	

CI: Confidence Interval; *$p \leq 0.05$, **$p < 0.01$, ***$p < 0.001$, †$p < 0.10$ (borderline)

Table 43: Bivariate analysis to determine differences between proxy and non-proxy interviews among older adults in subjective physical abuse severity analysis (n = 76)

	Proxy Used		
Characteristic	No (n = 71)	Yes (n = 5)	χ^2/ t-test
Gender			
Male	28 (37.8)	0 (0)	3.26
Female	41 (55.4)	5 (6.8)	
Ethnicity			
Caucasian	45 (60.8)	4 (5.4)	5.11
African-American	19 (25.7)	0 (0)	
Hispanic	3 (4.1)	0 (0)	
Other	2 (2.7)	1 (1.4)	
Education			
Less than high-school	8 (10.8)	0 (0)	1.29
High-school	15 (20.3)	2 (2.7)	
More than high-school	46 (62.2)	3 (4.1)	
Household income (mean/SD)	4.12 (2.00)	3.20 (1.92)	0.99
Household income below poverty line			
No	62 (83.8)	4 (5.4)	0.47
Yes	7 (9.5)	1 (1.4)	
Primary Language			
English	n/a	n/a	n/a
Spanish			
Geographical context			
Urban	10 (13.5)	0 (0)	0.87
Suburban	10 (13.5)	1 (1.4)	
Rural	49 (66.2)	4 (5.4)	
Functional Capacity (mean/SD)	10.45 (1.44)	6.80 (3.35)	2.42†
Health			
Poor (very poor, poor, fair)	22 (29.7)	4 (5.4)	4.74*
Good (good, very good, excellent)	47 (63.5)	1 (1.4)	
Age (mean/SD)	70.57 (8.17)	84.80 (5.54)	-3.82***
Marital Status			
Married/partnered	23 (31.1)	2 (2.7)	1.79
Separated/divorced	28 (37.8)	3 (4.1)	
Other (widowed/single)	18 (24.3)	0 (0)	
Living Arrangement			
Alone	24 (32.9)	1 (1.4)	0.48
Shared	44 (60.3)	4 (5.5)	

CI: Confidence Interval; *$p \leq 0.05$, **$p < 0.01$, ***$p < 0.001$, †$p < 0.10$ (borderline)

Table 46: Bivariate analysis to determine differences between proxy and non-proxy interviews among older adults in subjective neglect severity analysis (n = 75)

	Proxy Used		
Characteristic	No (n = 71)	Yes (n = 5)	χ^2/ t-test
Gender			
Male	20 (26.7)	2 (2.7)	1.11
Female	43 (57.3)	10 (13.3)	
Ethnicity			
Caucasian	37 (50.0)	9 (12.2)	1.38
African-American	18 (24.3)	2 (2.7)	
Hispanic	2 (2.7)	0 (0)	
Other	5 (6.8)	1 (1.4)	
Education			
Less than high-school	18 (24.3)	2 (2.7)	1.26
High-school	17 (23.0)	5 (6.8)	
More than high-school	27 (36.5)	5 (6.8)	
Household income (mean/SD)	3.36 (2.10)	3.91 (2.02)	-0.80
Household income below poverty line			
No	45 (60.0)	9 (12.0)	0.06
Yes	18 (24.0)	3 (4.0)	
Primary Language			
English	n/a	n/a	n/a
Spanish			
Geographical context			
Urban	42 (56.0)	3 (4.0)	7.74*
Suburban	18 (24.0)	7 (9.3)	
Rural	3 (4.0)	2 (2.7)	
Functional Capacity (mean/SD)	8.59 (1.55)	6.58 (2.47)	2.71*
Health			
Poor (very poor, poor, fair)	47 (62.7)	9 (12.0)	0.001
Good (good, very good, excellent)	16 (21.3)	3 (4.0)	
Age (mean/SD)	72.21 (8.33)	82.92 (8.17)	-4.10***
Marital Status			
Married/partnered	21 (28.4)	2 (2.7)	3.23
Separated/divorced	24 (32.4)	8 (10.8)	
Other (widowed/single)	17 (23.0)	2 (2.7)	
Living Arrangement			
Alone	27 (37.0)	2 (2.7)	2.51
Shared	35 (47.9)	9 (12.3)	

CI: Confidence Interval; *p ≤ 0.05, **p < 0.01, ***p < 0.001, †p < 0.10 (borderline)

Appendix C
Bivariate/Unadjusted Analysis

Table 3: Bivariate tests and unadjusted logistic regression to explore relationships between independent variables and one-year emotional abuse incidence (n = 4156)

	Emotional Abuse		Bivariate Test	Unadjusted Logistic Regression
Characteristic	No (n = 4049)	Yes (n = 77)	χ^2/ t-test	OR (95% CI)
Physical Vulnerability				
Functional Capacity (mean/SD)	10.58 (1.23)	10.18 (1.73)	2.02*	0.85 (0.75 – 0.95)**
Functional Capacity				
No limitations	3374 (81.8)	55 (1.3)	7.69*	-
One limitation	278 (6.7)	9 (0.2)		1.99 (0.97 – 4.06)†
≥ Two limitations	395 (9.6)	13 (0.3)		2.02 (1.09 – 3.73)*
Health				
Poor	997 (24.2)	24 (0.6)	1.73	0.72 (0.44 – 1.18)
Good	3049 (74.0)	53 (1.3)		-
Age (mean/SD)	74.17 (8.66)	71.58 (8.16)	2.6**	0.97 (0.94 – 0.99)*
Age				
60 – 69	1397 (33.9)	36 (0.9)	5.92*	-
70 – 84	2083 (50.5)	35 (0.8)		0.65 (0.41 – 1.04)†
85+	569 (13.8)	6 (0.1)		0.41 (0.17 – 0.98)*
General Co-Habitation				
Living Arrangement				
Alone	1536 (37.5)	30 (0.7)	0.02	-
Shared	2487 (60.7)	47 (1.1)		0.97 (0.61 – 1.54)
Marital Status				
Married/partnered	1917 (46.6)	24 (0.6)	18.23***	-
Separated/divorced	490 (11.9)	21 (0.5)		3.42 (1.89 – 6.20)***
Other (widow/single)	1630 (39.6)	32 (0.8)		1.57 (0.92 – 2.67)†
Socio-Cultural				
Gender				
Male	1436 (34.8)	25 (0.6)	0.30	-
Female	2613 (63.3)	52 (1.3)		1.14 (0.71 – 1.85)
Ethnicity				
Caucasian	2934 (71.7)	52 (1.3)	2.21	-
African-American	733 (17.9)	19 (0.5)		1.46 (0.86 – 2.29)
Hispanic	245 (6.0)	4 (0.1)		0.92 (0.33 – 2.57)
Other	102 (2.5)	2 (0.0)		1.11 (0.27 – 4.61)
Education				
Less than high-school	502 (12.2)	8 (0.2)	5.24	0.68 (0.29 – 1.62)
High school	1268 (30.9)	16 (0.4)		0.54 (0.26 – 1.10)*
College	1615 (39.4)	38 (0.9)		1.00 (0.55 – 1.84)
Post graduate	640 (15.6)	15 (0.4)		-
Household income (mean/SD)	4.5 (2.06)	4.11 (2.21)	1.64†	0.91 (0.81 – 1.02)†

Household income				
Below $30,000	1330 (35.0)	35 (0.9)	3.44†	-
$30,000 or above	2391 (63.0)	41 (1.1)		0.65 (0.41 – 1.03)†
Below Poverty Line				
No	3787 (91.8)	67 (1.6)	5.21*	-
Yes	262 (6.3)	10 (0.2)		2.16 (1.10 – 4.24)*
Primary Language				
English	3981 (96.5)	77 (1.9)	1.32	-
Spanish	68 (1.7)	0 (0)		n/a (non-converge)
Geographical context				
Urban	2320 (56.4)	54 (1.3)	5.36†	-
Suburban	1097 (26.6)	13 (0.3)		0.51 (0.28 – 0.94)*
Rural	623 (15.1)	10 (0.2)		0.69 (0.35 (1.36)
Interviewed by proxy				
No	3903 (94.6)	72 (1.7)	1.79	-
Yes	146 (3.5)	5 (0.1)		1.86 (0.74 – 4.67)

CI: Confidence Interval; *$p \leq 0.05$, **$p < 0.01$, ***$p < 0.001$, †$p < 0.10$ (borderline)

Table 5: Bivariate tests and unadjusted logistic regression to explore relationships between independent variables and one-year physical abuse incidence (n = 4156)

	Physical Abuse		Bivariate Test	Unadjusted Logistic Regression
Characteristic	No (n = 4072)	Yes (n = 76)	χ^2/ t-score	OR (95% CI)
Physical Vulnerability				
Functional Capacity (mean/SD)	10.58 (1.24)	10.21 (1.84)	1.75†	0.854 (0.75 – 0.97)*
Functional Capacity				
No limitations	3392 (81.8)	56 (1.4)	6.60*	-
One limitation	280 (6.8)	6 (0.1)		1.30 (0.55 – 3.04)
≥ Two limitations	397 (9.6)	14 (0.3)		2.14 (1.18 – 3.87)*
Health				
Poor	998 (24.1)	26 (0.6)	3.76†	1.6 (0.99 – 2.58)†
Good	3071 (74.1)	50 (1.2)		-
Age (mean/SD)	74.19 (8.65)	71.32 (8.74)	2.87**	0.96 (0.93 – 0.99)**
Age				
60 – 69	1397 (33.7)	41 (1.0)	13.48**	-
70 – 84	2106 (50.8)	25 (0.6)		0.40 (0.25 – 0.67)***
85+	569 (13.7)	10 (0.2)		0.60 (0.30 – 1.2)
General Co-Habitation				
Living Arrangement				
Alone	1545 (37.5)	25 (0.6)	0.60	-
Shared	2501 (60.7)	49 (1.2)		1.2 (0.75 – 1.97)
Marital Status				
Married/partnered	1927 (46.6)	27 (0.7)	10.15**	-
Separated/divorced	496 (12.0)	18 (0.4)		2.59 (1.42 – 4.74)**
Other (widow/single)	1637 (39.6)	31 (0.7)		1.35 (0.80 – 2.27)
Socio-Cultural				
Gender				
Male	1444 (34.8)	29 (0.7)	0.24	-
Female	2628 (63.4)	47 (1.1)		0.89 (0.56 – 1.42)
Ethnicity				
Caucasian	2952 (71.8)	49 (1.2)	4.08	-
African-American	734 (17.9)	20 (0.5)		1.64 (0.97 – 2.78)†
Hispanic	246 (6.0)	4 (0.1)		0.98 (0.35 – 2.74)
Other	104 (2.5)	3 (0.1)		1.74 (0.53 – 6.67)
Education				
Less than high-school	504 (12.2)	9 (0.2)	14.25**	0.48 (0.22 – 1.03)†
High school	1271 (30.8)	17 (0.4)		0.36 (0.19 – 0.67)**
College	1634 (39.6)	26 (0.6)		0.42 (0.24 – 0.74)**
Post graduate	639 (15.5)	24 (0.6)		-
Household income (mean/SD)	4.50 (2.06)	4.04 (2.02)	1.93*	0.90 (0.80 – 1.00)†
Household income				

Below $30,000	1334 (34.9)	35 (0.9)	3.50†	-
$30,000 or above	2407 (63.1)	41 (1.1)		1.54 (0.98 – 2.43)†
Below Poverty Line				
No	3808 (91.8)	67 (1.6)	3.49†	-
Yes	264 (6.4)	9 (0.2)		0.52 (0.26 – 1.05)†
Primary Language				
English	4004 (96.5)	76 (1.8)	1.29	-
Spanish	68 (1.6)	0 (0)		n/a (non-converge)
Geographical context				
Urban	2234 (56.4)	54 (1.3)	6.22*	-
Suburban	1104 (26.7)	12 (0.3)		0.47 (0.25 – 0.88)*
Rural	625 (15.1)	10 (0.2)		0.69 (0.35 – 1.37)
Interviewed by proxy				
No	3922 (94.6)	71 (1.7)	1.74	-
Yes	150 (3.6)	5 (0.1)		1.84 (0.73 – 4.63)

CI: Confidence Interval; *$p \leq 0.05$, **$p < 0.01$, ***$p < 0.001$, †$p < 0.10$ (borderline)

Table 8: Bivariate tests and unadjusted logistic regression to explore relationships between independent variables and one-year neglect incidence (n = 701)

	Neglect		Bivariate Test	Unadjusted Logistic Regression
Characteristic	No (n = 621)	Yes (n = 75)	χ^2/ t-score	OR (95% CI)
Physical Vulnerability				
Functional Capacity (mean/SD)	8.48 (2.0)	8.27 (1.86)	0.87	0.95 (0.85 – 1.07
Functional Capacity				
One limitation	261 (37.5)	23 (3.3)	3.80	-
Two limitations	150 (21.6)	20 (2.9)		1.73 (0.98 – 3.05)†
≥ Three limitations	210 (30.2)	32 (4.6)		1.51 (0.80 – 2.85)
Health				
Poor	348 (50.0)	56 (8.0)	9.54**	2.32 (1.34 – 3.98)**
Good	273 (39.2)	19 (2.7)		-
Age (mean/SD)	78.96 (8.82)	73.92 (9.15)	4.65***	0.94 (0.91 – 0.97)***
Age				
60 – 69	108 (15.5)	26 (3.7)	17.22***	-
70 – 84	324 (46.6)	39 (5.6)		0.50 (0.29 – 0.86)*
85+	189 (27.2)	10 (1.4)		0.22 (0.10 – 0.47)***
General Co-Habitation				
Living Arrangement				
Alone	248 (36.0)	29 (4.2)	0.01	-
Shared	368 (53.4)	44 (6.4)		1.02 (0.62 – 1.68)
Marital Status				
Married/partnered	196 (29.3)	23 (3.3)	16.02***	-
Separated/divorced	63 (9.1)	19 (2.7)		2.57 (1.31 – 5.03)**
Other (widow/single)	360 (51.9)	32 (4.6)		0.76 (0.43 – 1.33)
Socio-Cultural				
Gender				
Male	164 (23.6)	22 (3.2)	0.29	-
Female	457 (65.7)	53 (7.6)		0.87 (0.51 – 1.47)
Ethnicity				
Caucasian	409 (59.3)	46 (6.7)	9.10*	-
African-American	131 (19.0)	20 (2.9)		1.36 (0.78 – 2.38)
Hispanic	57 (8.3)	2 (0.3)		0.31 (0.07 – 1.32)
Other	19 (2.8)	6 (0.9)		2.81 (1.07 – 7.39)*
Education				
Less than high-school	148 (21.5)	20 (2.9)	0.77	1.00 (0.45 – 2.25)
High school	211 (30.7)	22 (3.2)		0.77 (0.35 – 1.71)
College	180 (26.2)	22 (3.2)		0.90 (0.41 – 2.00)
Post graduate	74 (10.8)	10 (1.5)		-
Household income (mean/SD)	3.69 (2.03)	3.44 (2.08)	0.98	0.94 (0.83 – 1.06)

Household income				
Below $30,000	295 (46.4)	38 (6.0)	0.01	-
$30,000 or above	269 (42.3)	34 (5.3)		0.98 (0.60 – 1.60)
Below Poverty Line				
No	534 (76.7)	54 (7.8)	9.99**	-
Yes	87 (12.5)	21 (3.0)		2.39 (1.37 – 4.15)**
Primary Language				
English	594 (85.3)	75 (10.8)	3.39†	-
Spanish	27 (3.9)	0 (0.0)		n/a (non-converge)
Geographical context				
Urban	391 (56.3)	45 (6.5)	5.57†	1.96 (0.75 – 5.08)
Suburban	143 (20.6)	25 (3.6)		2.97 (1.10 – 8.06)*
Rural	85 (12.2)	5 (0.7)		-
Interviewed by proxy				
No	540 (77.6)	63 (9.1)	0.51	-
Yes	81 (11.6)	12 (1.7)		1.27 (0.66 – 2.46)

CI: Confidence Interval; *p ≤ .05, **p < .01, ***p < .001, †p < .10 (borderline)

Table 10: Bivariate tests and unadjusted logistic regression to explore relationships between detailed co-habitation variables and one-year emotional abuse incidence (n = 4156)

	Emotional Abuse		Bivariate Test	Unadjusted Logistic Regression
Co-habitation Dynamic	No (n = 4049)	Yes (n = 77)	χ^2/ t-score	OR (95% CI)
Number of Co-habitants (mean/SD)	0.88 (1.02)	0.90 (1.05)	-0.16	1.02 (0.82 – 1.26)
Number of Co-habitants ≥ 60 (mean/SD)	1.40 (0.55)	1.30 (0.46)	1.86†	0.68 (0.42 – 1.09)
Family Co-Habitation				
Lives alone	1536 (37.4)	30 (0.7)	3.48	-
Lives with family only	2269 (55.3)	40 (1.0)		0.90 (0.56 – 1.46)
Lives with family and others	134 (3.3)	3 (0.1)		1.15 (0.35 – 3.81)
Lives with non-family others only	87 (2.1)	4 (0.1)		2.35 (0.81 – 6.83)
Lives with Spouse/Partner				
No	2199 (53.5)	56 (1.4)	10.15**	0.45 (0.27 – 0.74)**
Yes	1837 (44.7)	21 (0.5)		
Lives with Children				
No	3320 (80.7)	62 (1.5)	0.16	1.12 (0.64 – 1.99)
Yes	715 (17.4)	15 (0.4)		
Lives with In-Law Children				
No	3901 (94.9)	74 (1.8)	0.08	1.18 (0.37 – 3.79)
Yes	134 (3.3)	3 (0.1)		
Lives with Grandchildren				
No	3792 (92.2)	69 (1.7)	2.51	1.81 (0.86 – 3.81)
Yes	243 (5.9)	8 (0.2)		
Lives with Other Relatives				
No	3898 (94.8)	72 (1.8)	2.13	1.96 (0.78 – 4.93)
Yes	138 (3.4)	5 (0.1)		
Live with Friends				
No	3988 (97.0)	75 (1.8)	1.32	2.26 (0.54 – 9.49)
Yes	47 (1.1)	2 (0.0)		
Live with Attendant				
No	4007 (97.4)	77 (1.9)	0.54	n/a (non-converge)
Yes	28 (0.7)	0 (0)		
Live with Other Non-Relatives				
No	4021 (97.8)	75 (1.8)	0.09**	7.15 (1.61 – 31.81)*
Yes	15 (0.4)	2 (0.0)		

CI: Confidence Interval; *p ≤ .05, **p < .01, ***p < .001, †p < .10 (borderline)

Table 13: Bivariate tests and unadjusted logistic regression to explore relationships between detailed co-habitation variables and one-year physical abuse incidence (n = 4156)

	Physical Abuse		Bivariate Test	Unadjusted Logistic Regression
Co-habitation Dynamic	No (n = 4072)	Yes (n = 76)	χ^2/ t-score	OR (95% CI)
Number of Co-habitants (mean/SD)	0.88 (1.02)	0.97 (1.01)	-0.81	1.086 (0.89 – 1.33)
Number of Co-habitants ≥ 60 (mean/SD)	1.40 (0.55)	1.28 (0.45)	2.34*	0.61 (0.38 – 1.0)*
Family Co-Habitation				
Lives alone	1545 (37.5)	25 (0.6)	4.77	-
Lives with family only	2280 (55.3)	44 (1.1)		1.19 (0.73 – 1.96)
Lives with family and others	136 (3.3)	1 (0.0)		0.45 (0.06 – 3.38)
Lives with non-family others only	88 (2.1)	4 (0.1)		2.81 (0.96 – 8.25)†
Lives with Spouse/Partner				
No	2214 (53.5)	51 (1.2)	4.75*	-
Yes	1845 (44.6)	25 (0.6)		0.59 (0.36 – 0.95)*
Lives with Children				
No	3344 (80.9)	56 (1.4)	3.02†	-
Yes	714 (17.3)	19 (0.5)		1.59 (0.94 – 2.69)†
Lives with In-Law Children				
No	3922 (94.9)	75 (1.8)	0.97	-
Yes	136 (3.3)	1 (1.8)		0.39 (0.05 – 2.79)
Lives with Grandchildren				
No	3812 (92.2)	70 (1.7)	0.44	-
Yes	246 (6.0)	6 (0.1)		1.33 (0.57 – 3.09)
Lives with Other Relatives				
No	3919 (94.8)	71 (1.7)	0.78	-
Yes	140 (3.4)	4 (0.1)		1.58 (0.57 – 4.38)
Live with Friends				
No	4011 (97.0)	73 (1.8)	1.43	-
Yes	47 (1.1)	2 (0)		2.34 (0.56 – 9.81)
Live with Attendant				
No	4030 (97.5)	74 (1.8)	3.90*	-
Yes	28 (0.7)	2 (0)		3.89 (0.91 – 16.63)†
Live with Other Non-Relatives				
No	4043 (97.8)	75 (1.8)	1.55	-
Yes	16 (0.4)	1 (0)		3.37 (0.44 – 25.73)

CI: Confidence Interval; *p ≤ .05, **p < .01, ***p < .001, †p < .10 (borderline)

Table 17: Bivariate tests and unadjusted logistic regression to explore relationships between co-habitation variables and one-year neglect incidence (n = 701)

	Neglect		Bivariate Test	Unadjusted Logistic Regression
Co-habitation Dynamic	No (n = 621)	Yes (n = 75)	χ^2/ t-score	OR (95% CI)
Number of Co-habitants (mean/SD)	1.0 (1.25)	1.08 (1.27)	-0.53	1.05 (0.88 – 1.26)
Number of Co-habitants ≥ 60 (mean/SD)	1.28 (0.51)	1.29 (0.54)	-0.24	1.06 (0.67 – 1.68)
Family Co-Habitation				
Lives alone	248 (35.9)	29 (4.2)	1.53	-
Lives with family only	300 (43.4)	39 (5.6)		1.11 (0.67 – 1.85)
Lives with family and others	41 (5.9)	3 (0.4)		0.63 (0.18 – 2.15)
Lives with non-family others only	29 (4.2)	2 (0.3)		0.59 (0.13 – 2.60)
Lives with Spouse/Partner				
No	432 (62.3)	51 (7.4)	0.02	-
Yes	187 (27.0)	23 (3.3)		1.04 (0.62 – 1.76)
Lives with Children				
No	448 (64.6)	52 (7.5)	0.15	-
Yes	171 (24.7)	22 (3.2)		1.11 (0.65 – 1.88)
Lives with In-Law Children				
No	579 (83.4)	40 (5.8)	0.70	-
Yes	72 (10.4)	3 (7.0)		0.60 (0.18 – 2.0)
Lives with Grandchildren				
No	555 (80.0)	66 (9.5)	0.20	-
Yes	64 (9.2)	9 (1.3)		1.18 (0.56 – 2.49)
Lives with Other Relatives				
No	594 (85.6)	73 (10.5)	0.34	-
Yes	25 (3.6)	2 (0.3)		0.65 (0.15 – 2.81)
Live with Friends				
No	613 (88.3)	74 (10.7)	0.09	-
Yes	6 (0.9)	1 (0.1)		1.38 (0.16 – 11.63)
Live with Attendant				
No	593 (85.4)	74 (10.7)	1.47	-
Yes	26 (3.7)	1 (0.1)		0.31 (0.04 – 2.31)
Live with Other Non-Relatives				
No	619 (89.2)	74 (10.7)	1.60	-
Yes	0 (0)	1 (0.1)		n/a (non-convergence)

CI: Confidence Interval; *p ≤ .05, **p < .01, ***p < .001, †p < .10 (borderline)

Table 20: Bivariate tests and unadjusted multinomial regression to explore relationships between independent variables and emotional abuse objective severity (n = 509)

	Emotional Abuse Objective Severity			Bivariate Test	Unadjusted Multinomial Regression		
Characteristic	Score 1/2	Score 6/7	Score 12+	χ^2/F-Test	Score 1/2	Score 6/7	Score 12+
Physical Vulnerability							
Functional Capacity (mean/SD)	10.45 (1.51)	10.48 (1.46)	10.55 (1.01)	0.11	0.98 (0.81 – 1.18)	0.99 (0.83 – 1.19)	1.03 (0.84 – 1.26)
Functional Capacity							
Two or more limitations	13 (2.6)	19 (3.7)	14 (2.8)	5.81	1.16 (0.48 – 2.79)	1.19 (0.53 – 2.69)	1.29 (0.55 – 3.07)
One limitation	7 (1.4)	12 (2.4)	14 (2.8)		0.42 (0.16 – 1.07)†	.50 (0.22 – 1.12)†	0.86 (0.39 – 1.89)
No limitations	94 (18.5)	134 (26.4)	91 (17.9)		-	-	-
Health							
Poor	25 (4.9)	48 (9.5)	32 (6.3)	1.84	0.75 (0.41 – 1.38)	1.09 (0.64 – 1.87)	0.99 (0.55 – 1.78)
Good	89 (17.6)	117 (23.1)	86 (17.0)		-	-	-
Age (mean/SD)	71.83 (7.63)	69.69 (8.28)	70.18 (7.34)	21.17***	0.93 (0.90–0.96)***	0.90 (0.87–0.93)***	0.91 (0.88–0.94)***
Age							
60 – 69	51 (10.0)	102 (20.0)	64 (12.6)	48.67***	4.66 (1.80–12.07)**	5.73 (2.51–13.1)***	11.7(3.63–37.7)***
70 – 84	56 (11.0)	50 (9.8)	51 (10.0)		2.05 (0.83 – 5.03)	1.12 (0.51 – 2.49)	3.73 (1.19 – 11.64)*
85+	8 (1.6)	13 (2.6)	4 (0.8)		-	-	-
Victim-Perpetrator Relationship							
Victim Dependent on Perpetrator							
No	97 (20.0)	151 (31.1)	104 (21.4)	1.12	0.64 (0.24 – 1.69)	0.85 (0.33 – 2.18)	0.68 (0.26 – 1.81)
Yes	12 (2.5)	14 (2.9)	12 (2.5)		-	-	-
Family Perpetrator							
No	40 (8.3)	37 (7.6)	26 (5.4)	8.55*	1.37 (0.76 – 2.46)	0.68 (0.38 – 1.21)	0.68 (0.37 – 1.27)
Yes	69 (14.3)	128 (26.4)	90 (18.6)		-	-	-
Spouse/Partner Perpetrator							
No	80 (16.5)	102 (21.1)	65 (13.4)	11.15*	1.0 (0.54 – 1.87)	0.59 (0.34 – 1.02)†	0.46 (0.26 – 0.83)*
Yes	29 (6.0)	63 (13.0)	51 (10.5)		-	-	-
Adult Child							

Perpetrator							
No	85 (17.6)	124 (25.6)	92 (19.0)	1.02	1.21 (0.64 – 2.32)	1.04 (0.58 – 1.86)	1.31 (0.69 – 2.51)
Yes	24 (5.0)	41 (8.5)	24 (5.0)		-	-	-
In-law Child Perpetrator							
No	103 (21.3)	158 (32.6)	114 (23.6)	2.28	0.76 (0.21 – 2.79)	1.0 (0.29 – 3.52)	2.53 (0.45 – 14.14)
Yes	6 (1.2)	7 (1.4)	2 (0.4)		-	-	-
Grandchild Perpetrator							
No	107 (22.1)	160 (33.1)	113 (23.3)	2.93	n/a (non-converge)	n/a (non-converge)	n/a (non-converge)
Yes	2 (0.4)	5 (1.0)	3 (0.6)				
Other Relative Perpetrator							
No	95 (19.6)	146 (30.2)	104 (21.5)	3.22	1.50 (0.70 – 3.23)	1.70 (0.83 – 3.45)	1.91 (0.86 – 4.24)
Yes	14 (2.9)	19 (3.9)	12 (2.5)		-	-	-
Neighbor Perpetrator							
No	102 (21.1)	162 (33.5)	113 (23.3)	5.31	0.32 (0.06 – 1.56)	1.17 (0.19 – 7.15)	0.82 (0.13 – 5.01)
Yes	7 (1.4)	3 (0.6)	3 (0.6)		-	-	-
Friend Perpetrator							
No	95 (19.6)	145 (30.0)	105 (21.7)	4.52	1.61 (0.75 – 3.44)	1.72 (0.86 – 3.44)	2.26 (1.01 – 5.06)*
Yes	14 (2.9)	20 (4.1)	11 (2.3)		-	-	-
Other Non-Relative Perpetrator							
No	96 (19.8)	158 (32.6)	106 (21.9)	7.52†	0.33 (0.10 – 1.04)†	1.00 (0.29 – 3.52)	0.47 (0.14 – 1.55)
Yes	13 (2.7)	7 (1.4)	10 (2.1)				
Aid Perpetrator							
No	n/a	n/a	n/a	n/a	n/a (no +ve cases)	n/a (no +ve cases)	n/a (no +ve cases)
Yes							
General Co-Habitation							
Living Arrangement							
Alone	40 (7.9)	48 (9.5)	30 (6.0)	7.18†	0.79 (0.46 – 1.35)	0.60 (0.36 – 1.00)†	0.50 (0.28 – 0.87)*
Shared	74 (14.7)	116 (23.0)	88 (17.5)		-	-	-
Marital Status							
Married/partnered	53 (10.4)	78 (15.4)	61 (12.0)	2.33	-	-	-
Separated/divorced	20 (3.9)	30 (5.9)	25 (4.9)		0.93 (0.45 – 1.92)	0.95 (0.49 – 1.84)	1.01 (0.51 – 2.02)
Other (widow/single)	42 (8.3)	56 (11.0)	33 (6.5)		1.11 (0.62 – 2.0)	1.01 (0.59 – 1.74)	0.76 (0.42 – 1.38)

Socio-Cultural							
Gender							
Male	45 (8.8)	73 (14.3)	44 (8.6)	1.66	0.93 (0.55 – 1.58)	1.15 (0.70 – 1.87)	0.85 (0.50 – 1.44)
Female	70 (13.8)	92 (18.1)	75 (14.7)		-	-	-
Ethnicity							
Caucasian	85 (16.8)	119 (23.5)	81 (16.0)	11.56	-	-	-
African-American	20 (4.0)	27 (5.3)	25 (4.9)		0.83 (0.42 – 1.62)	0.80 (0.43 – 1.49)	1.09 (0.57 – 2.07)
Hispanic	7 (1.4)	15 (3.0)	5 (1.0)		2.22 (0.56 – 8.89)	4.40 (0.95 – 12.14)*	1.67 (0.39 – 7.21)
Other	2 (0.4)	4 (0.8)	7 (1.4)		0.95 (0.13 – 6.93)	1.36 (0.24 – 7.61)	3.5 (0.71 – 17.36)
Education							
Less than high-school	11 (2.2)	20 (3.9)	10 (2.0)	12.59*	0.73 (0.30 0 1.79)	1.14 (0.51 – 2.54)	0.67 (0.27 – 1.68)
High school	19 (3.7)	46 (9.1)	24 (4.7)		0.39 (0.20 – 0.73)**	0.80 (0.47 – 1.37)	0.49 (0.27 – 0.91)*
More than high-school	85 (16.8)	99 (19.5)	84 (16.6)		-	-	
Household income (mean/SD)	4.77 (2.13)	5.13 (2.19)	4.84 (2.26)	1.82	1.06 (0.93 – 1.20)	1.15 (1.02 – 1.29)*	1.08 (0.95 – 1.22)
Household income							
Below $30,000	30 (6.1)	47 (9.6)	36 (7.4)	3.00	0.63 (0.35 – 1.11)	0.69 (0.41 – 1.17)	0.76 (0.44 – 1.33)
$30,000 or above	79 (16.2)	112 (23.0)	78 (16.0)		-	-	
Below Poverty Line							
No	104 (20.4)	157 (30.8)	108 (21.2)	4.33	0.45 (0.15 – 1.34)	0.94 (0.30 – 2.94)	0.47 (0.16 – 1.39)
Yes	11 (2.2)	8 (1.6)	11 (2.2)		-	-	-
Primary Language							
English	n/a	n/a	n/a	n/a	n/a (non-converge)	n/a (non-converge)	n/a (non-converge)
Spanish							
Geographical context							
Urban	61 (12.0)	96 (18.9)	76 (14.9)	4.71	1.25 (0.61 – 2.59)	0.83 (0.41 – 1.68)	0.64 (0.29 – 1.40)
Suburban	32 (6.3)	46 (9.0)	29 (5.7)		0.91 (0.50 – 1.66)	0.83 (0.48 – 1.44)	0.66 (0.36 – 1.21)
Rural	22 (4.3)	23 (4.5)	14 (2.8)		-	-	-
Interviewed by proxy							
No	108 (21.2)	156 (30.6)	115 (22.6)	1.29	1.05 (0.36 – 3.09)	1.18 (0.43 – 3.26)	1.95 (0.56 – 6.87)
Yes	7 (1.4)	9 (1.8)	4 (0.8)		-	-	-

CI: Confidence Interval; *p ≤ 0.05, **p < 0.01, ***p < 0.001, †p < 0.10 (borderline). Referent category for multinomial regression: score = 0.

Table 24: Bivariate tests and unadjusted logistic regression to explore relationships between independent variables and physical abuse objective severity (n = 89)

	Physical Abuse Objective Severity		Bivariate Test	Unadjusted Logistic Regression
Characteristic	Score 0 - 5	Score 6+	χ^2/t-test	OR (95% CI)
Physical Vulnerability				
Functional Capacity (mean/SD)	9.95 (2.10)	10.72 (0.61)	-2.54	1.54 (0.90 – 2.63)
Functional Capacity				
No limitation	39 (47.6)	20 (24.4)	3.27†	-
One limitation	4 (4.9)	3 (3.7)		1.46 (0.30 – 7.18)
Two or more limitations	14 (17.1)	2 (2.4)		0.28 (0.06 – 1.35)†
Health				
Poor	24 (29.3)	7 (8.5)	1.47	0.54 (0.19 – 1.48)
Good	33 (40.2)	18 (22.0)		-
Age (mean/SD)	73.18 (1.08)	68.48 (9.20)	2.31*	0.93 (0.87 – 0.99)*
Age				
60 – 69	23 (28.0)	19 (23.2)	12.11**	-
70 – 84	27 (32.9)	2 (2.4)		0.09 (0.02 – 0.43)**
85+	7 (8.5)	4 (4.9)		0.69 (0.18 – 2.72)
Victim-Perpetrator Relationship				
Victim Dependent on Perpetrator				
No	49 (60.5)	21 (25.9)	0.18	-
Yes	7 (8.6)	4 (4.9)		1.33 (0.35 – 5.04)
Family Perpetrator				
Yes	40 (49.4)	17 (21.0)	.10	0.85 (0.31 – 2.36)
No	16 (19.8)	8 (9.9)		-
Spouse Perpetrator				
No	31 (37.8)	17 (20.7)	1.33	-
Yes	26 (31.7)	8 (9.8)		0.54 (0.20 – 1.46)
Adult Child Perpetrator				
No	46 (56.1)	22 (26.8)	0.65	-
Yes	11 (13.4)	3 (3.7)		0.56 (0.14 – 2.21)
In-Law Child Perpetrator				
No	n/a	n/a	n/a	n/a
Yes				
Grandchild Perpetrator				
No	56 (68.3)	22 (26.8)	3.93*	-
Yes	1 (1.2)	3 (3.7)		7.50 (0.74 – 76.06)†
Other Relative Perpetrator				
No	52 (64.2)	20 (24.7)	2.89†	-
Yes	4 (4.9)	5 (6.2)		3.25 (0.79 – 13.34)†
Neighbor Perpetrator				
No	n/a	n/a	n/a	n/a

Yes				
Friend Perpetrator				
No	49 (60.5)	22 (27.2)	0.004	-
Yes	7 (8.6)	3 (3.7)		0.96 (0.23 – 4.04)
Other Non-Relative Perpetrator				-
No	49 (60.5)	19 (23.5)	1.70	2.21 (0.66 – 7.43)
Yes	7 (8.6)	6 (7.4)		
Aid Perpetrator				
No	n/a	n/a	n/a	n/a
Yes				
General Co-Habitation				
Living Arrangement				
Alone	22 (27.5)	5 (6.3)	2.56	-
Shared	34 (42.5)	19 (23.8)		2.46 (0.80 – 7.55)†
Marital Status				
Married/partnered	19 (23.2)	10 (12.2)	0.39	-
Separated/divorced	24 (29.3)	10 (12.2)		0.79 (0.27 – 2.29)
Other (widow/single)	14 (17.1)	5 (6.1)		0.68 (0.19 – 2.43)
Socio-Cultural				
Gender				
Male	20 (24.4)	12 (14.6)	1.22	-
Female	37 (45.1)	13 (15.9)		0.59 (0.23 – 1.52)
Ethnicity				
Caucasian	38 (46.3)	16 (19.5)	4.61	n/a
African-American	12 (14.6)	9 (11.0)		
Hispanic	4 (4.9)	0 (0)		
Other	3 (3.7)	0 (0)		
Ethnicity				
Non-minority	38 (46.3)	16 (19.5)	0.06	-
Minority	19 (23.2)	9 (11.0)		1.13 (0.42 – 3.01)
Education				
Less than high-school	5 (6.1)	3 (3.7)	0.82	1.60 (0.34 – 7.53)
High school	12 (14.6)	7 (8.5)		1.56 (0.52 – 4.70)
More than high-school	40 (48.8)	15 (18.3)		-
Household income (mean/SD)	4.09 (2.07)	4.12 (1.94)	0.95	1.01 (0.80 – 1.28)
Household income				
Below $30,000	23 (28.8)	12 (15.0)	0.27	1.28 (0.50 – 3.32)
$30,000 or above	32 (40.0)	13 (16.3)		-
Below Poverty Line				
No	51 (62.2)	22 (26.8)	0.04	-
Yes	6 (7.3)	3 (3.7)		1.16 (0.27 – 5.06)
Primary Language				
English	n/a	n/a	n/a	n/a
Spanish				

Geographical context				
Urban	6 (7.3)	5 (6.1)	1.39	-
Suburban	9 (11.0)	4 (4.9)		1.17 (0.31 – 4.33)
Rural	42 (51.2)	16 (19.5)		2.19 (0.59 – 8.18)
Interviewed by proxy				
No	52 (63.4)	25 (30.5)	2.34	n/a
Yes	5 (6.1)	0 (0)		

CI: Confidence Interval; *p ≤ 0.05, **p < 0.01, ***p < 0.001, †p < 0.10 (borderline)

Table 27: Bivariate tests and unadjusted logistic regression to explore relationships between independent variables and objective neglect severity (n = 109)

	Objective Neglect Severity		Bivariate Test	Unadjusted Logistic Regression
Characteristic	Score 0 - 6	Score 12+	χ^2/t-test	OR (95% CI)
Physical Vulnerability				
Functional Capacity (mean/SD)	8.72 (1.72)	7.56 (2.0)	2.98**	0.72 (0.57 – 0.92)**
Functional Capacity				
One limitation	27 (27.0)	6 (6.0)	10.04**	-
Two limitations	21 (21.0)	6 (6.0)		1.29 (0.36 -4.57)
≥ Three limitations	20 (20.0)	20 (20.0)		4.50 (1.53 – 13.25)**
Health				
Poor (very poor, poor, fair)	49 (49.0)	27 (27.0)	1.81	-
Good (good, very good, excellent)	19 (19.0)	5 (5.0)		0.48 (0.16 – 1.42)
Age (mean/SD)	75.76 (8.86)	72.47 (9.04)	1.73†	0.96 (0.91 – 1.01)†
Age				
60 – 69	17 (17.0)	14 (14.0)	4.04	-
70 – 84	41 (41.0)	13 (13.0)		0.39 (0.15 – 0.99)*
85+	10 (10.0)	5 (5.0)		0.61 (0.17 – 2.20)
Victim-Perpetrator Relationship				
Family Perpetrator				
Yes	26 (26.0)	16 (16.0)	1.24	-
No	42 (42.0)	16 (16.0)		0.62 (0.27 – 1.45)
Spouse Perpetrator				
No	56 (56.0)	27 (27.0)	0.06	-
Yes	12 (12.0)	5 (5.0)		0.86 (0.28 – 2.70)
Adult Child Perpetrator				
No	45 (45.0)	24 (24.0)	0.79	-
Yes	23 (23.0)	8 (8.0)		0.53 (0.25 – 1.68)
In-Law Child Perpetrator				
No	65 (65.0)	32 (32.0)	1.46	-
Yes	3 (3.0)	0 (0)		n/a (non-converge)
Grandchild Perpetrator				
No	63 (63.0)	30 (30.0)	0.04	-
Yes	5 (5.0)	2 (2.0)		0.84 (0.15 – 4.58)
Other Relative Perpetrator				
No	66 (66.0)	31 (31.0)	0.001	-
Yes	2 (2.0)	1 (1.0)		1.07 (0.09 – 12.19)
Neighbor Perpetrator				
No	n/a	n/a	n/a	-
Yes				n/a (non-converge)
Friend Perpetrator				

No	66 (66.0)	31 (31.0)	0.001	-
Yes	2 (2.0)	1 (1.0)		1.07 (0.09 – 12.19)
Other Non-Relative Perpetrator				
No	64 (64.0)	31 (31.0)	0.35	-
Yes	4 (4.0)	1 (1.0)		0.52 (0.06 – 4.81)
Aid Perpetrator				
No	53 (53.0)	20 (20.0)	2.63†	-
Yes	15 (15.0)	12 (12.0)		2.12 (0.85 – 5.30)†
General Co-Habitation				
Living Arrangement				
Alone	28 (28.9)	13 (13.4)	0.02	-
Shared	39 (40.2)	17 (17.5)		0.94 (0.39 – 2.24)
Marital Status				
Married/partnered	23 (23.2)	9 (9.1)	2.19	-
Separated/divorced	11 (11.1)	9 (9.1)		2.09 (0.65 – 6.74)
Other (widow/single)	34 (34.3)	13 (13.1)		0.98 (0.36 – 2.66)
Socio-Cultural				
Gender				
Male	19 (19.0)	12 (12.0)	0.93	-
Female	49 (49.0)	20 (20.0)		0.65 (0.27 – 1.57)
Ethnicity				
Caucasian	40 (40.4)	20 (20.2)	1.90	-
African-American	21 (21.2)	7 (7.1)		0.67 (0.24 – 1.83)
Hispanic	4 (4.0)	1 (1.0)		0.50 (0.05 – 4.77)
Other	3 (3.0)	3 (3.0)		2.0 (0.37 – 10.82)
Ethnicity				
Non-minority	40 (40.4)	20 (20.2)	0.29	-
Minority	28 (28.3)	11 (11.1)		0.79 (0.33 – 1.89)
Education				
Less than high-school	18 (18.2)	8 (8.1)	1.22	-
High school	18 (18.2)	12 (12.1)		1.50 (0.50 – 4.54)
More than high-school	31 (31.3)	12 (12.1)		0.87 (0.30 – 2.53)
Household income (mean/SD)	3.94 (2.09)	2.83 (1.97)	2.46*	0.76 (0.61 – 0.96)*
Household income				
Below $30,000	31 (32.0)	18 (18.6)	1.56	-
$30,000 or above	36 (37.1)	12 (12.4)		0.57 (0.24 – 1.38)
Below Poverty Line				
No	56 (56.0)	20 (20.0)	4.70*	-
Yes	12 (12.9)	12 (12.0)		2.80 (1.08 – 7.23)*
Primary Language				
English	67 (67.0)	32 (32.0)	0.48	n/a (non-converge)
Spanish	1 (1.0)	0 (0)		
Geographical context				
Urban	37 (37.0)	21 (21.0)	1.21	-
Suburban	24 (24.0)	9 (9.0)		0.66 (0.26 -1.68)

Rural	7 (7.0)	2 (2.0)		0.50 (0.10 – 2.65)
Interviewed by proxy				
No	57 (57.0)	26 (26.0)	0.10	-
Yes	11 (11.0)	6 (6.0)		1.20 (0.40 – 3.58)

CI: Confidence Interval; *p ≤ 0.05, **p < 0.01, ***p < 0.001, †p < 0.10 (borderline)

Table 29: Bivariate tests and unadjusted multinomial regression to explore relationships between detailed co-habitation variables and objective emotional abuse severity (n = 509)

	Emotional Abuse Objective Severity			Bivariate Test	Unadjusted Multinomial Regression		
Characteristic	Score 1/2	Score 6/7	Score 12+	χ^2/F-Test	Score 1/2	Score 6/7	Score 12+
Number of Co-habitants (mean/SD)	0.91 (1.05)	1.05 (0.97)	1.20 (1.19)	2.26†	1.05 (0.79 – 1.38)	1.20 (0.94 – 1.53)	1.33 (1.04 – 1.72)*
Number of Co-habitants ≥ 60 (mean/SD)	1.46 (0.50)	1.45 (0.52)	1.43 (0.53)	0.88	1.46 (0.87 – 2.46)	1.43 (0.88 – 2.32)	1.30 (0.77 – 2.18)
Family Co-Habitation							
Lives alone	40 (7.9)	48 (9.5)	30 (6.0)	10.44	-	-	-
Lives with family only	66 (13.1)	102 (20.2)	80 (15.9)		1.21 (0.70 – 2.10)	1.56 (0.93 – 2.62)†	1.96 (1.10 – 3.47)*
Lives with family and others	4 (0.8)	5 (1.0)	4 (0.8)		1.47 (0.31 – 6.96)	1.53 (0.35 – 6.77)	1.96 (0.41 – 9.37)
Lives with non-family others only	4 (0.8)	9 (1.8)	4 (0.8)		4.40 (0.47 – 41.03)	8.25 (1.00 – 67.78)*	5.87 (0.63 – 55.10)
Perpetrator Co-habitation (general)							
No	67 (13.8)	83 (17.1)	51 (10.5)	32.34***	0.42 (0.22 – 0.78)**	0.26 (0.15 – 0.47)***	0.20 (0.11 – 0.37)***
Yes	41 (8.4)	81 (16.7)	65 (13.4)		-	-	-
Non-Perpetrator Co-habitation (general)							
No	67 (13.7)	100 (20.5)	78 (16.0)	1.50	1.10 (0.63 – 1.92)	1.08 (0.65 – 1.80)	1.38 (0.79 – 2.41)
Yes	42 (8.6)	64 (13.1)	39 *8.0)		-	-	-
Perpetrator/Non-perpetrator Co-habitation (specified)							
Lives alone	40 (8.2)	48 (9.9)	30 (6.2)	34.27***	-	-	-
Lives alone w/ perpetrator	28 (5.8)	52 (10.7)	48 (9.9)		2.20 (1.02 – 4.76)*	3.41 (1.66 – 6.98)**	5.03 (2.36– 0.70)***
Lives only w/ non-	26 (5.3)	35 (7.2)	21 (4.3)		0.84 (0.43 – 1.64)	0.94 (0.51 – 1.76)	0.91 (0.44 – 1.85)

perpetrators							
Lives w/ perpetrator and non-perpetrators	14 (2.9)	29 (6.0)	17 (3.5)		2.57 (0.90 – 7.32)†	4.43 (1.68 – 11.68)**	4.16 (1.47 – 11.76)**
Lives w Spouse/Part							
No	62 (12.2)	89 (17.5)	61 (12.0)	0.44	0.94 (0.56 – 1.59)	0.95 (0.59 – 1.55)	0.85 (0.50 – 1.42)
Yes	53 (10.4)	75 (14.8)	58 (11.4)		-		
Lives with Children							
No	92 (18.2)	121 (24.0)	88 (17.4)	4.15	0.88 (0.45 – 1.74)	0.59 (0.32 – 1.09)†	0.62 (0.33 – 1.18)
Yes	22 (4.4)	43 (8.5)	30 (5.9)		-	-	-
Lives with In-Law Children							
No	110 (21.7)	159 (31.4)	114 (22.5)	0.52	0.62 (0.15 – 2.67)	0.90 (0.21 – 3.85)	0.81 (0.18 – 3.69)
Yes	5 (1.0)	5 (1.0)	4 (0.8)		-	-	-
Lives with Grandchildren							
No	107 (21.1)	143 (28.3)	105 (20.8)	5.30	0.78 (0.26 – 2.32)	0.40 (0.16 – 1.02)*	0.47 (0.17 – 1.29)
Yes	8 (1.6)	21 (4.2)	13 (2.6)		-	-	-
Lives with Other Relatives							
No	111 (21.9)	158 (31.2)	110 (21.7)	5.15	0.52 (0.09 – 2.92)	0.50 (0.10 – 2.51)	0.23 (0.05 – 1.09)†
Yes	4 (0.8)	6 (1.2)	9 (1.8)		-	-	-
Live with Friends							
No	113 (22.4)	158 (31.3)	116 (23.0)	2.72	0.53 (0.05 – 5.91)	0.25 (0.03 – 2.07)	0.54 (0.05 – 6.06)
Yes	2 (0.4)	6 (1.2)	2 (0.4)		-	-	-
Live with Attendant							
No	n/a	n/a	n/a		n/a (non-converge)	n/a (non-converge)	n/a (non-converge)
Yes							
Live with Other Non-Relatives							
No	n/a	n/a	n/a		n/a (non-converge)	n/a (non-converge)	n/a (non-converge)
Yes							

CI: Confidence Interval; *p ≤ 0.05, **p < 0.01, ***p < 0.001, †p < 0.10 (borderline).

Table 35: Bivariate tests and unadjusted logistic regression to explore relationships between detailed co-habitation variables and objective physical abuse severity (n = 89)

Characteristic	Physical Abuse Objective Severity		Bivariate Test	Unadjusted Logistic Regression
	Score 0 - 5	Score 6+	χ^2/t-test	OR (95% CI)
Number of Co-habitants (mean/SD)	0.79 (0.78)	1.38 (1.28)	-2.10*	1.83 (1.09 – 3.08)*
Number of Co-habitants ≥ 60 (mean/SD)	1.28 (0.45)	1.36 (0.49)	-0.71	1.44 (0.53 – 3.92)
Family Co-Habitation				
Lives alone	22 (26.8)	5 (6.1)	2.75	-
Lives with family only	31 (37.8)	18 (22.0)		2.56 (0.92 – 7.92)*
Other	4 (4.9)	2 (2.4)		2.20 (0.31 – 15.55)
Perpetrator Co-habitation (general)				
No	36 (43.4)	11 (13.3)	3.16†	-
Yes	21 (25.3)	15 (18.1)		2.34 (0.91 – 6.02)†
Non-Perpetrator Co-habitation (general)				
No	38 (46.9)	16 (19.8)	0	-
Yes	19 (23.5)	8 (9.9)		1.0 (0.36 – 2.75)
Perpetrator/Non-perpetrator Co-habitation (specified)				
Lives alone	22 (26.5)	5 (6.0)	4.56	-
Lives alone w/ perpetrator	16 (19.3)	13 (15.7)		3.58 (1.06 – 12.06)*
Lives w/ perpetrator and non-perpetrator others	5 (6.0)	2 (2.4)		1.76 (0.26 – 11.84)
Lives only w/ non-perpetrators	14 (16.9)	6 (7.2)		1.89 (0.48 – 7.37)
Lives with Spouse/Partner				
No	40 (48.2)	15 (18.1)	1.25	1.73 (0.66 – 4.52)
Yes	17 (20.5)	11 (13.3)		-
Lives with Children				
No	42 (50.6)	20 (24.1)	0.10	0.84 (0.28 – 2.49)
Yes	15 (18.1)	6 (7.2)		-
Lives with In-Law Children				
No	n/a	n/a	n/a	n/a
Yes				
Lives with Grandchildren				
No	53 (63.9)	23 (27.7)	0.47	1.73 (0.36 – 8.35)
Yes	4 (4.8)	3 (3.6)		-
Lives with Other Relatives				
No	55 (67.1)	23 (28.0)	0.76	2.39 (0.32 – 18.02)
Yes	2 (2.4)	2 (2.4)		-
Live with Friends				
No	n/a	n/a	n/a	n/a

Yes				
Live with Attendant				
No	n/a	n/a	n/a	n/a
Yes				
Live with Other Non-Relatives				
No	n/a	n/a	n/a	n/a
Yes				

CI: Confidence Interval; *p ≤ 0.05, **p < 0.01, ***p < 0.001, †p < 0.10 (borderline). Note. The family co-habitation variable was condensed into a three-level variable because the four-level variable did not converge in regression analysis.

Table 39: Bivariate and unadjusted logistic regression to explore relationships between detailed co-habitation variables and objective neglect severity (n = 109)

	Objective Neglect Severity		Bivariate Test	Unadjusted Logistic Regression
Characteristic	Score 0 - 6	Score 12+	χ^2/t-test	OR (95% CI)
Number of Co-habitants (mean/SD)	1.12 (1.50)	1.13 (1.41)	-0.04	1.01 (0.75 – 1.35)
Number of Co-habitants ≥ 60 (mean/SD)	1.28 (0.54)	1.25 (0.44)	0.27	0.89 (0.38 – 2.08)
Family Co-Habitation				
Lives alone	28 (28.9)	13 (13.4)	0.09	-
Live with family only	34 (35.1)	15 (15.5)		0.95 (0.39 – 2.33)
Lives with family and others	3 (3.1)	1 (1.0)		0.72 (0.07 – 7.58)
Lives only with non-family others	2 (2.1)	1 (1.0)		1.08 (0.09 – 12.98)
Perpetrator Co-habitation (general)				
No	40 (40.4)	21 (21.2)	0.32	-
Yes	27 (27.3)	11 (11.1)		0.78 (0.32 – 1.87)
Non-Perpetrator Co-habitation (general)				
No	41 (41.8)	20 (20.4)	0.10	-
Yes	26 (26.5)	11 (11.2)		0.87 (0.36 – 2.10)
Perpetrator/Non-perpetrator Co-habitation (specified)				
Lives alone	28 (28.6)	13 (13.3)	1.08	-
Lives alone w/ perpetrator	13 (13.3)	7 (7.1)		1.16 (0.38 – 3.59)
Lives w/ perpetrator and non-perpetrator others	14 (14.3)	4 (4.1)		0.62 (0.17 – 2.24)
Lives only w/ non-perpetrators	12 (12.2)	7 (7.1)		1.26 (0.40 – 3.93)
Lives with Spouse/Partner				
No	45 (45.5)	22 (22.2)	0.22	-
Yes	23 (23.2)	9 (9.1)		0.80 (0.32 – 2.02)
Lives with Children				
No	48 (49.0)	21 (21.4)	0.16	-
Yes	19 (19.4)	10 (10.2)		1.20 (0.48 – 3.02)
Lives with In-Law Children				
No	63 (63.6)	31 (31.3)	0.37	-
Yes	4 (4.0)	1 (1.0)		0.51 (0.05 – 4.74)
Lives with Grandchildren				
No	58 (58.6)	29 (29.3)	0.34	-
Yes	9 (9.1)	3 (3.0)		0.67 (0.17 – 2.65)
Lives with Other Relatives				
No	66 (66.7)	31 (31.3)	0.29	-
Yes	1 (1.0)	1 (1.0)		2.13 (0.13 – 35.17)
Live with Friends				

No	n/a	n/a	n/a	-
Yes				n/a (non-converge)
Live with Attendant				
No	n/a	n/a	n/a	-
Yes				n/a (non-converge)
Live with Other Non-Relatives				
No	n/a	n/a	n/a	-
Yes				n/a (non-converge)

CI: Confidence Interval; *p ≤ 0.05, **p < 0.01, ***p < 0.001, †p < 0.10 (borderline). Note. The family co-habitation variable was condensed into a three-level variable because the four-level variable did not converge in regression analysis.

Table 41: Bivariate tests and unadjusted ordinal regression to explore relationships between independent variables and emotional abuse subjective severity (n = 123)

Characteristic	Emotional Abuse Subjective Severity			Bivariate Test	Unadjusted Ordinal Regression
	Not Serious	Somewhat Serious	Very Serious	χ^2/t-test	OR (95% CI)
Physical Vulnerability					
Functional Capacity (mean/SD)	10.70 (0.83)	10.27 (1.53)	10.15 (1.84)	1.67	-0.20 (-0.44 – 0.04)†
Functional Capacity					
No limitation	36 (29.3)	24 (19.5)	33 (26.8)	3.20	-
One limitation	4 (3.3)	3 (2.4)	6 (4.9)		0.42 (-0.66 – 1.49)
Two or more limitations	3 (2.4)	6 (4.9)	8 (6.5)		0.67 (-0.31 – 1.65)
Health					
Poor (very poor, poor, fair)	12 (9.8)	10 (8.2)	13 (10.7)	0.07	-0.04 (-0.76 – 0.69)
Good (good, very good, excellent)	30 (24.6)	23 (18.9)	34 (27.9)		-
Age (mean/SD)	72.16 (7.58)	71.91 (8.64)	70.43 (7.47)	0.64	-0.02 (-0.06 – 0.02)
Age					
60 – 69	18 (14.6)	15 (12.2)	25 (20.3)	1.73	0.51 (-0.86 – 1.88)
70 – 84	22 (17.9)	15 (12.2)	20 (16.3)		0.17 (-1.20 – 1.54)
85+	3 (2.4)	3 (2.4)	2 (1.6)		-
Victim-Perpetrator Relationship					
Victim Dependent on Perpetrator					
No	39 (32.2)	27 (22.3)	43 (35.5)	1.63	-0.08 (-1.18 – 1.02)
Yes	3 (2.5)	5 (4.1)	4 (3.3)		-
Family Perpetrator					
Yes	30 (24.8)	22 (18.2)	37 (30.6)	1.12	-
No	12 (9.9)	10 (8.3)	10 (8.3)		-0.30 (-1.05 – 0.45)
Spouse Perpetrator					
No	24 (19.8)	21 (17.4)	30 (24.8)	0.67	0.22 (-0.46 – 0.90)
Yes	18 (14.9)	11 (9.1)	17 (14.0)		-
Adult Child Perpetrator					
No	34 (28.1)	24 (19.8)	36 (29.8)	0.42	-0.19 (-0.98 – 0.61)
Yes	8 (6.6)	8 (6.6)	11 (9.1)		-
In-Law Child Perpetrator					
No	42 (34.7)	30 (24.8)	46 (38.0)	2.97	-0.47 (-2.64 – 1.69)

Yes	0 (0)	2 (1.7)	1 (0.8)		-
Grandchild Perpetrator					
No	41 (33.9)	32 (26.4)	46 (38.0)	0.74	0.09 (-2.49 – 2.67)
Yes	1 (0.8)	0 (0)	1 (0.8)		-
Other Relative Perpetrator					
No	39 (32.2)	29 (24.0)	39 (32.2)	2.32	-0.81 (-1.89 – 0.26)
Yes	3 (2.5)	3 (2.5)	8 (6.6)		-
Neighbor Perpetrator					
No	40 (33.1)	30 (24.8)	45 (37.2)	0.17	0.09 (-1.42 – 1.61)
Yes	2 (1.7)	2 (1.7)	2 (1.7)		-
Friend Perpetrator					
No	36 (29.8)	31 (25.6)	44 (36.4)	3.34	0.91 (-0.34 – 2.15)
Yes	6 (5.0)	1 (0.8)	3 (2.5)		-
Other Non-Relative Perpetrator					
No	38 (31.4)	27 (22.3)	43 (35.5)	1.11	0.10 (-0.96 – 1.16)
Yes	4 (3.3)	5 (4.1)	4 (3.3)		-
Aid Perpetrator					
No	n/a	n/a	n/a	n/a	n/a
Yes					
General Co-Habitation					
Living Arrangement					
Alone	8 (6.6)	11 (9.0)	19 (15.6)	4.83†	0.78 (0.06 – 1.51)*
Shared	34 (40.5)	22 (18.0)	28 (23.0)		-
Marital Status					
Married/partnered	21 (17.1)	13 (10.6)	17 (13.8)	2.57	-
Separated/divorced	6 (4.9)	8 (6.5)	12 (9.8)		0.66 (-0.23 – 1.54)
Other (widow/single)	16 (13.0)	12 (9.8)	18 (14.6)		0.27 (-0.47 – 1.00)
Socio-Cultural					
Gender					
Male	19 (15.4)	11 (8.9)	14 (11.4)	2.14	-0.50 (-1.18 – 0.19)
Female	24 (19.5)	22 (17.9)	33 (26.8)		-
Ethnicity					
Caucasian	30 (24.4)	22 (17.9)	31 (25.2)	1.90	-
African-American	8 (6.5)	7 (5.7)	12 (9.8)		0.30 (-0.51 – 1.10)
Hispanic	2 (1.6)	2 (1.6)	3 (2.4)		0.28 (-1.15 – 1.71)
Other	3 (2.4)	2 (1.6)	1 (0.8)		-0.72 (-2.30 – 0.86)

Ethnicity					
Non-minority	30 (24.4)	22 (17.9)	31 (25.2)	0.16	-0.14 (-0.83 – 0.56)
Minority	13 (10.6)	11 (8.9)	16 (13.0)		-
Education					
Less than high-school	7 (5.7)	2 (1.6)	4 (3.3)	6.65	-0.90 (-2.0 – 0.21)
High school	13 (10.7)	6 (4.9)	8 (6.6)		-0.76 (-1.57 – 0.06)†
More than high-school	22 (18.0)	25 (20.5)	35 (28.7)		-
Household income (mean/SD)	4.44 (2.11)	4.79 (2.37)	4.35 (2.11)	0.41	-0.02 (-0.17 – 0.14)
Household income					
Below $30,000	15 (12.5)	13 (10.8)	18 (15.0)	0.08	0.08 (-0.60 – 0.76)
$30,000 or above	26 (21.7)	20 (16.7)	28 (23.3)		-
Below Poverty Line					
No	40 (32.5)	30 (24.4)	42 (34.1)	0.37	-0.35 (-1.51 – 0.80)
Yes	3 (2.4)	3 (2.4)	5 (4.1)		-
Primary Language					
English	n/a	n/a	n/a	n/a	n/a
Spanish					
Geographical context					
Rural	6 (4.9)	2 (1.6)	9 (7.3)	4.76	0.30 (-0.67 – 1.28)
Suburban	12 (9.8)	6 (4.9)	8 (6.5)		-0.48 (-1.30 – 0.35)
Urban	25 (20.3)	25 (20.3)	30 (24.4)		-
Controls					
Objective Severity					
Score 1/2	2 (1.8)	2 (1.8)	4 (3.6)	1.67	0.66 (-0.71 – 2.02)
Score6/7	3 (2.7)	3 (2.7)	2 (1.8)		-0.13 (-1.47 – 1.21)
Score 12+	38 (34.5)	23 (20.9)	33 (30.0)		-
Objective severity (cont.)	16.51 (6.88)	19.61 (10.2)	19.72 (10.57)	1.55	0.03 (-0.01 – 0.07)†
Interviewed by proxy					
No	41 (33.3)	31 (25.2)	45 (36.6)	0.14	0.07 (-1.44 – 1.59)
Yes	2 (1.6)	2 (1.6)	2 (1.6)		-

CI: Confidence Interval; *$p \leq 0.05$, **$p < 0.01$, ***$p < 0.001$, †$p < 0.10$ (borderline)

Table 44: Bivariate tests and unadjusted ordinal regression to explore relationships between independent variables and physical abuse subjective severity (n = 76)

Characteristic	Physical Abuse Subjective Severity			Bivariate Test	Unadjusted Ordinal Regression
	Not Serious	Somewhat Serious	Very Serious	χ^2/t-test	OR (95% CI)
Physical Vulnerability					
Functional Capacity (mean/SD)	9.65 (0.65)	8.40 (2.95)	9.45 (1.36)	3.0	-0.01 (-0.24 – 0.22)
Functional Capacity					
No limitation	17 (23.0)	13 (17.6)	25 (33.8)	4.97	-
One limitation	3 (4.1)	2 (2.7)	0 (0)		-1.56 (-3.44 – 0.32)†
Two or more limitations	3 (4.1)	5 (6.8)	6 (8.1)		0.11 (-0.98 – 1.21)
Health					
Poor (very poor, poor, fair)	9 (12.2)	10 (13.5)	7 (9.5)	4.24	-0.64 (-1.52 – 0.26)
Good (good, very good, excellent)	14 (18.9)	10 (13.5)	24 (32.4)		-
Age (mean/SD)	68.91 (8.98)	73.65(10.18)	71.52 (7.58)	1.58	0.02 (-0.03 – 0.07)
Age					
60 – 69	15 (20.3)	10 (13.5)	15 (20.3)	6.58	0.68 (-0.64 – 1.99)
70 – 84	5 (6.8)	5 (6.8)	14 (18.9)		1.54 (0.11 – 2.96)*
85+	3 (4.1)	5 (6.8)	2 (2.7)		-
Victim-Perpetrator Relationship					
Victim Dependent on Perpetrator					
No	19 (26.0)	17 (23.3)	28 (38.4)	4.80†	1.48 (0.07 – 2.90)*
Yes	6 (8.2)	1 (1.4)	2 (2.7)		-
Family Perpetrator					
Yes	17 (24.6)	10 (14.5)	19 (27.5)	0.68	-0.08 (-1.01 – 0.85)
No	7 (10.1)	7 (10.1)	9 (13.0)		-
Spouse Perpetrator					
No	14 (19.2)	13 (17.8)	18 (24.7)	1.22	0.10 (-0.77 – 0.98)
Yes	11 (15.1)	5 (6.8)	12 (16.4)		-
Adult Child Perpetrator					
No	19 (26.0)	14 (19.2)	26 (35.6)	1.14	0.55 (-0.53 – 1.64)
Yes	6 (8.2)	4 (5.5)	4 (5.5)		-
In-Law Child Perpetrator					
No	25 (34.2)	17 (23.3)	29 (39.7)	1.28	-0.78 (-3.56 – 1.99)

Yes	0 (0)	1 (1.4)	1 (1.4)		-
Grandchild Perpetrator					
No	25 (34.2)	16 (21.9)	29 (39.7)	3.36	-0.41 (-2.60 – 1.77)
Yes	0 (0)	2 (2.7)	1 (1.4)		-
Other Relative Perpetrator					
No	24 (32.9)	16 (21.9)	25 (34.2)	2.24	-1.37 (-2.80 -0.05)
Yes	1 (1.4)	2 (2.7)	5 (6.8)		-
Neighbor Perpetrator					
No	n/a	n/a	n/a	n/a	n/a
Yes					
Friend Perpetrator					
No	21 (28.8)	14 (19.2)	28 (38.4)	2.47	0.63 (-0.62 – 1.87)
Yes	4 (5.5)	4 (5.5)	2 (2.7)		-
Other Non-Relative Perpetrator					
No	22 (30.1)	15 (20.5)	23 (31.5)	1.22	-0.64 (-1.78 – 0.51)
Yes	3 (4.1)	3 (4.1)	7 (9.6)		-
Attendant Perpetrator					
No	n/a	n/a	n/a	n/a	n/a
Yes					
General Co-Habitation					
Living Arrangement					
Alone	6 (8.1)	7 (9.5)	12 (16.2)	1.24	0.41 (-0.49 – 1.32)
Shared	18 (24.3)	11 (14.9)	20 (27.0)		-
Marital Status					
Married/partnered	11 (14.9)	7 (9.5)	7 (9.5)	4.85	-
Separated/divorced	4 (5.4)	3 (4.1)	11 (14.9)		0.54 (-0.44 – 1.53)
Other (widow/single)	10 (13.5)	8 (10.8)	13 (17.6)		1.25 (0.07 – 2.43)*
Socio-Cultural					
Gender					
Male	13 (17.6)	7 (9.5)	8 (10.8)	5.39†	-1.03 (-1.92 – -0.13)*
Female	10 (13.5)	13 (17.6)	23 (31.1)		-
Ethnicity					
Caucasian	15 (20.3)	13 (17.6)	21 (28.4)	3.52	-
African-American	7 (9.5)	6 (8.1)	6 (8.1)		-0.38 (-1.36 – 0.60)
Hispanic	1 (1.4)	0 (0)	2 (2.7)		0.67 (-1.62 – 2.96)
Other	0 (0)	1 (1.4)	2 (2.7)		1.18 (-1.32 – 3.68)

Ethnicity					
Non-minority	15 (20.3)	13 (17.6)	21 (28.4)	0.06	0.10 (-0.80 – 0.99)
Minority	8 (10.8)	7 (9.5)	10 (13.5)		-
Education					
Less than high-school	3 (4.1)	2 (2.7)	3 (4.1)	1.00	-0.32 (-1.70 – 1.06)
High school	5 (6.8)	6 (8.1)	6 (8.1)		-0.20 (-1.22 – 0.82)
More than high-school	15 (20.3)	12 (16.2)	22 (29.7)		-
Household income (mean/SD)	4.35 (2.21)	4.00 (1.78)	3.87 (2.01)	0.38	-0.10 (-0.31 – 0.12)
Household income					
Below $30,000	10 (13.5)	8 (10.8)	16 (21.6)	0.74	0.29 (-0.56 – 1.14)
$30,000 or above	13 (17.6)	12 (16.2)	15 (20.3)		-
Below Poverty Line					
No	20 (27.0)	18 (24.3)	28 (37.8)	0.17	0.26 (-1.09 – 1.62)
Yes	3 (4.1)	2 (2.7)	3 (4.1)		-
Primary Language					
English	n/a	n/a	n/a	n/a	n/a
Spanish					
Geographical context					
Rural	5 (6.8)	1 (1.4)	4 (5.4)	4.60	-0.70 (-1.95 – 0.56)
Suburban	5 (6.8)	3 (4.1)	3 (4.1)		-0.84 (-2.06 – 0.37)
Urban	13 (17.6)	16 (21.6)	24 (32.4)		-
Controls					
Objective Severity					
Score 1 – 5	12 (23.5)	7 (13.7)	7 (13.7)	0.06	0.03 (-1.0 – 1.05)
Score 6+	12 (23.5)	6 (11.8)	7 (13.7)		-
Objective severity (cont.)	5.67 (7.0)	4.92 (5.12)	8.50 (11.29)	0.79	0.03 (-0.03 – 0.10)
Interviewed by proxy					
No	24 (31.6)	16 (21.1)	31 (40.8)	0.89	-0.17 (-1.86 – 1.53)
Yes	1 (1.3)	2 (2.6)	2 (2.6)		-

CI: Confidence Interval; *$p \leq 0.05$, **$p < 0.01$, ***$p < 0.001$, †$p < 0.10$ (borderline)

Table 47: Bivariate tests and unadjusted ordinal regression to explore relationships between independent variables and subjective neglect severity (n = 75)

Characteristic	Subjective Neglect Severity			Bivariate Test	Unadjusted Ordinal Regression
	Not Serious	Somewhat Serious	Very Serious	χ^2/t-test	OR (95% CI)
Physical Vulnerability					
Functional Capacity (mean/SD)	9.00 (1.00)	8.45 (1.91)	7.33 (2.15)	6.39**	-0.42 (-0.70 - -0.15)**
Functional Capacity					
One limitation	10 (13.5)	8 (10.8)	4 (5.4)	9.16†	-
Two limitations	10 (13.5)	4 (5.4)	6 (8.1)		0.10 (-1.04 – 1.23)
Three or more limitations	7 (9.5)	8 (10.8)	17 (23.0)		1.28 (0.24 – 2.33)*
Health					
Poor (very poor, poor, fair)	19 (25.7)	15 (20.3)	22 (29.7)	0.91	0.48 (-0.51 – 1.46)
Good (good, very good, excellent)	8 (10.8)	5 (6.8)	5 (6.8)		-
Age (mean/SD)	74.41(10.14)	73.0 (8.39)	73.59 (1.67)	0.87	-0.01 (-0.06 – 0.04)
Age					
60 – 69	11 (14.9)	6 (8.1)	9 (12.2)	1.27	0.08 (-1.32 – 1.48)
70 – 84	12 (16.2)	12 (16.2)	15 (20.3)		0.41 (-0.93 – 1.75)
85+	4 (5.4)	2 (2.7)	3 (4.1)		-
Victim-Perpetrator Relationship					
Family Perpetrator					
Yes	5 (6.8)	7 (9.5)	21 (28.4)	20.21***	2.13 (1.16 – 3.10)***
No	22 (29.7)	13 (17.6)	6 (8.1)		-
Spouse Perpetrator					
No	21 (28.4)	16 (21.6)	25 (33.8)	2.47	0.84 (-0.34 – 2.02)
Yes	6 (8.1)	4 (5.4)	2 (2.7)		-
Adult Child Perpetrator					
No	16 (21.6)	12 (16.2)	23 (31.1)	5.25†	0.94 (0.01 – 1.88)*
Yes	11 (14.9)	8 (10.8)	4 (5.4)		-
In-Law Child Perpetrator					
No	25 (33.8)	20 (27.0)	26 (35.1)	1.63	0.96 (-1.31 – 3.23)
Yes	2 (2.7)	0 (0)	1 (1.4)		-
Grandchild Perpetrator					
No	24 (32.4)	19 (25.7)	27 (36.5)	3.27	1.88 (-0.48 – 4.25)
Yes	3 (4.1)	1 (1.4)	0 (0)		-

Other Relative Perpetrator					
No	n/a	n/a	n/a	n/a	n/a
Yes					-
Neighbor Perpetrator					
No	n/a	n/a	n/a	n/a	n/a
Yes					-
Friend Perpetrator					
No	26 (35.1)	20 (27.0)	25 (33.8)	1.63	-0.96 (-3.23 – 1.31)
Yes	1 (1.4)	0 (0)	2 (2.7)		-
Other Non-Relative Perpetrator					
No	26 (35.1)	19 (25.7)	25 (33.8)	0.37	-0.58 (-2.48 – 1.32)
Yes	1 (1.4)	1 (1.4)	2 (2.7)		-
Attendant Perpetrator					
No	26 (35.1)	14 (18.9)	13 (17.6)	15.43***	-2.03 (-3.11 - -0.95)***
Yes	1 (1.4)	6 (8.1)	14 (18.9)		
General Co-Habitation					
Living Arrangement					
Alone	7 (9.7)	8 (11.1)	13 (18.1)	3.73	0.87 (-0.02 – 1.77)†
Shared	20 (27.8)	12 (16.7)	12 (16.7)		-
Marital Status					
Married/partnered	10 (13.7)	7 (9.6)	6 (8.2)	1.69	-
Separated/divorced	7 (9.6)	4 (5.5)	7 (9.6)		0.37 (-0.77 – 1.51)
Other (widow/single)	10 (13.7)	9 (12.3)	13 (17.8)		0.57 (-0.42 – 1.57)
Socio-Cultural					
Gender					
Male	6 (8.1)	4 (5.4)	12 (16.2)	4.43†	0.89 (-0.06 – 1.84)†
Female	21 (28.4)	16 (21.6)	15 (20.3)		-
Ethnicity					
Caucasian	n/a	n/a	n/a	n/a	-
African-American					0.25 (-0.72 – 1.23)
Hispanic					1.09 (-1.70 – 3.87)
Other					0.15 (-1.42 – 1.72)
Ethnicity					
Non-minority	19 (26.0)	10 (13.7)	16 (21.9)	2.02	-0.30 (-1.17 – 0.58)
Minority	8 (11.0)	10 (13.7)	10 (13.7)		-
Education					

Less than high-school	8 (11.0)	5 (6.8)	7 (9.6)	0.82	-0.32 (-1.36 – 0.72)
High school	8 (11.0)	7 (9.6)	7 (9.6)		-0.31 (-1.32 – 0.70)
More than high-school	10 (13.7)	8 (11.0)	13 (17.8)		-
Household income (mean/SD)	3.92 (2.0)	3.39 (2.12)	3.07 (2.15)	1.11	-0.16 (-0.37 – 0.05)
Household income					
Below $30,000	11 (15.5)	10 (14.1)	16 (22.5)	1.64	0.54 (-0.32 – 1.41)
$30,000 or above	15 (21.1)	8 (11.3)	11 (15.5)		-
Below Poverty Line					
No	20 (27.0)	15 (20.3)	18 (24.3)	0.52	-0.29 (-1.23 – 0.64)
Yes	7 (9.5)	5 (6.8)	9 (12.2)		-
Primary Language					
English	n/a	n/a	n/a	n/a	n/a
Spanish					
Geographical context					
Rural	1 (1.4)	1 (1.4)	3 (4.1)	5.86	0.65 (-1.16 – 2.46)
Suburban	13 (17.6)	7 (9.5)	5 (6.8)		-1.01 (-1.95 - -0.07)*
Urban	13 (17.6)	12 (16.2)	19 (25.7)		-
Controls					
Objective Severity					
Score 1 – 6	19 (26.0)	13 (17.8)	9 (12.3)	10.96**	-1.52 (-2.46 - -0.59)**
Score 12+	7 (9.6)	7(9.6)	18 (24.7)		-
Objective severity (cont.)	8.88 (5.66)	10.17 (8.66)	18.60 (14.98)	6.03**	0.08 (0.02 – 0.14)**
Interviewed by proxy					
No	22 (29.7)	18 (24.3)	22 (29.7)	0.78	-1.00 (-1.14 – 1.14)
Yes	5 (6.8)	2 (2.7)	5 (6.8)		-

CI: Confidence Interval; *p ≤ 0.05, **p < 0.01, ***p < 0.001, †p < 0.10 (borderline)

Table 51: Bivariate tests and unadjusted ordinal regression to explore relationships between detailed co-habitation variables and subjective emotional abuse severity (n = 123)

Characteristic	Emotional Abuse Subjective Severity			Bivariate Test	Unadjusted Ordinal Regression
	Not Serious	Somewhat Serious	Very Serious	χ^2/t-test	OR (95% CI)
Number of Co-habitants (mean/SD)	1.29 (1.18)	0.91 (0.91)	0.81 (0.95)	2.59†	-0.38 (-0.71 – -0.04)*
Number of Co-habitants ≥ 60 (mean/SD)	1.47 (0.55)	1.27 (0.45)	1.34 (0.49)	1.49	-0.40 (-1.05 – 0.26)
Family Co-Habitation					
Lives alone	8 (6.6)	11 (9.0)	19 (15.6)	6.64	-
Lives w/ family only	30 (24.6)	20 (16.4)	27 (22.1)		-0.72 (-1.45 – 0.00)*
Lives w/ family and non-family	2 (1.6)	1 (0.8)	0 (0)		-2.08 (-4.61 – 0.45)
Lives w/ non-family only	2 (1.6)	1 (0.8)	1 (0.8)		-1.19 (-3.13 – 0.76)
Perpetrator Co-habitation (general)					
No	18 (15.0)	18 (15.0)	29 (24.2)	2.87	0.56 (-0.10 – 1.23)†
Yes	23 (19.2)	14 (11.7)	18 (15.0)		-
Non-Perpetrator Co-habitation (general)	24 (19.8)	22 (18.2)	35 (28.9)	3.07	0.62 (-0.08 – 1.33)†
No	18 (14.9)	10 (8.3)	12 (9.9)		-
Yes					
Perpetrator/Non-perpetrator Co-habitation (specified)					
Lives alone	8 (6.7)	11 (9.2)	19 (15.8)	7.17	-
Lives alone w/ perpetrator	16 (13.3)	12 (10.0)	16 (13.3)		-0.63 (-1.44 – 0.19)
Lives only w/ non-perpetrators	10 (8.3)	6 (5.0)	10 (8.3)		-0.63 (-1.56 – 0.31)
Lives w/ perpetrator and non-perpetrator others	7 (5.8)	3 (2.5)	2 (1.7)		-1.57 (-2.84 – -0.29)*
Lives with Spouse/Partner					
No	23 (18.7)	20 (16.3)	32 (26.0)	2.01	0.49 (-0.19 – 1.16)
Yes	20 (16.3)	13 (10.6)	15 (12.2)		-
Lives with Children					
No	32 (26.2)	26 (21.3)	39 (32.0)	0.64	0.33 (-0.48 – 1.14)
Yes	10 (8.2)	7 (5.7)	8 (6.6)		-
Lives with In-Law Children					
No	40 (32.8)	32 (26.2)	47 (38.5)	2.16	1.57 (-0.91 – 4.04)

Yes	2 (1.6)	1 (0.8)	0 (0)		-
Lives with Grandchildren					
No	35 (28.7)	32 (26.2)	43 (35.2)	4.03	0.80 (-0.34 – 1.93)
Yes	7 (5.7)	1 (0.8)	4 (3.3)		-
Lives with Other Relatives					
No	39 (31.7)	31 (25.2)	43 (35.0)	0.28	0.08 (-1.12 – 1.27)
Yes	4 (3.3)	2 (1.6)	4 (3.3)		-
Live with Friends					
No	41 (33.6)	33 (27.0)	46 (37.7)	0.76	0.09 (-2.49 – 2.67)
Yes	1 (0.8)	0 (0)	1 (0.8)		-
Live with Attendant					
No	n/a	n/a	n/a	n/a	n/a
Yes					
Live with Other Non-Relatives					
No	41 (33.6)	32 (26.2)	47 (38.5)	1.32	1.04 (-1.71 – 3.79)
Yes	1 (0.8)	1 (0.8)	0 (0)		-

CI: Confidence Interval; *$p \leq 0.05$, **$p < 0.01$, ***$p < 0.001$, †$p < 0.10$ (borderline).

Table 55: Bivariate tests and unadjusted ordinal regression to explore relationships between detailed co-habitation variables and subjective physical abuse severity (n = 76)

Characteristic	Physical Abuse Subjective Severity			Bivariate Test	Unadjusted Ordinal Regression
	Not Serious	Somewhat Serious	Very Serious	χ^2/t-test	OR (95% CI)
Number of Co-habitants (mean/SD)	1.22 (1.20)	0.78 (0.81)	0.94 (0.97)	1.02	-0.20 (-0.62 – 0.23)
Number of Co-habitants ≥ 60 (mean/SD)	1.36 (0.49)	1.28 (0.46)	1.21 (0.42)	0.76	-0.59 (-1.53 – 0.34)
Family Co-Habitation					
Lives alone	6 (8.0)	7 (9.3)	13 (17.3)	3.96	-
Lives w/ family only	16 (21.3)	11 (14.7)0 0	16 (21.3)		-0.57 (-1.49 – 0.35)
Other	2 (2.7)	(0)	4 (5.3)		0.34 (-1.40 – 2.08)
Perpetrator Co-habitation (general)					
No	9 (11.8)	13 (17.1)	22 (28.9)	7.47*	0.98 (0.11 – 1.84)*
Yes	16 (21.1)	5 (6.6)	11 (14.5)		-
Non-Perpetrator Co-habitation (general)					
No	18 (24.7)	11 (15.1)	19 (26.0)	1.36	-0.46 (-1.37 - -.45)
Yes	6 (8.2)	7 (9.6)	12 (16.4)		-
Perpetrator/Non-perpetrator Co-habitation (specified)					
Lives alone	6 (7.9)	7 (9.2)	12 (15.8)	7.81	-
Lives alone w/ perpetrator	13 (17.1)	4 (5.3)	9 (11.8)		-0.86 (-1.90 – 0.17)†
Lives w/ perpetrator and non-perpetrator others	3 (3.9)	1 (1.3)	2 (2.6)		-0.89 (-2.56 – 0.78)
Lives only w/ non-perpetrators	3 (3.9)	6 (7.9)	10 (13.2)		0.255 (-0.89 – 1.40)
Lives with Spouse/Partner					
No	15 (20.3)	11 (14.9)	25 (33.8)	3.43	0.71 (-0.13 – 1.72)†
Yes	10 (13.5)	7 (9.5)	6 (8.1)		-
Lives with Children					
No	18 (24.3)	14 (18.9)	23 (31.1)	0.18	-.08 (-0.89 – 1.04)
Yes	7 (9.5)	4 (5.4)	8 (10.8)		-
Lives with In-Law Children					
No	n/a	n/a	n/a	n/a	n/a
Yes					

Lives with Grandchildren					
No	23 (31.1)	17 (23.0)	28 (37.8)	0.26	-0.22 (-1.78 – 1.34)
Yes	2 (2.7)	1 (1.4)	3 (4.1)		-
Lives with Other Relatives					
No	22 (30.1)	18 (24.7)	29 (39.7)	1.48	0.22 (-1.65 – 2.08)
Yes	2 (2.7)	0 (0)	2 (2.7)		-
Live with Friends					
No	23 (31.5)	18 (24.7)	30 (41.1)	0.72	0.21 (-2.39 – 2.81)
Yes	1 (1.4)	0 (0)	1 (1.4)		-
Live with Attendant					
No	24 (32.4)	18 (24.3)	30 (40.5)	0.69	0.18 (-2.42 – 2.78)
Yes	1 (1.4)	0 (0)	1 (1.4)		-
Live with Other Non-Relatives					
No	n/a	n/a	n/a	n/a	n/a
Yes					

CI: Confidence Interval; *$p \leq 0.05$, **$p < 0.01$, ***$p < 0.001$, †$p < 0.10$ (borderline).

Table 57: Bivariate tests and unadjusted ordinal regression to explore relationships between detailed co-habitation variables and subjective neglect severity (n = 75)

Characteristic	Subjective Neglect Severity			Bivariate Test	Unadjusted Ordinal Regression
	Not Serious	Somewhat Serious	Very Serious	χ^2/t-test	OR (95% CI)
Number of Co-habitants (mean/SD)	1.37 (1.31)	1.25 (1.48)	0.68 (0.95)	2.19	-0.33 (-0.69 – 0.03)†
Number of Co-habitants ≥ 60 (mean/SD)	1.41 (0.69)	1.25 (0.10)	1.22 (0.42)	0.89	-0.54 (-1.37 – 0.29)
Family Co-Habitation					
Lives alone	7 (9.7)	8 (11.1)	13 (18.1)	5.67	-
Lives w/ family only	17 (23.6)	11 (15.3)	11 (15.3)		-0.81 (-1.72)†
Lives w/ family and non-family	2 (2.8)	1 (1.4)	0 (0)		-1.94 (-4.49 – 0.61)
Lives only w/ non-family	1 (1.4)	0 (0)	1 (1.4)		-0.47 (-3.12 – 2.17)
Perpetrator Co-habitation (general)					
No	11 (14.9)	12 (16.2)	22 (29.7)	9.41**	1.41 (0.49 – 2.33)**
Yes	16 (21.6)	8 (10.8)	5 (6.8)		-
Non-Perpetrator Co-habitation (general)					
No	16 (21.9)	12 (16.4)	17 (23.3)	0.24	0.20 (-0.67 – 1.07)
Yes	11 (15.1)	8 (11.0)	9 (12.3)		-
Perpetrator/Non-perpetrator Co-habitation (specified)					
Lives alone	7 (9.6)	8 (11.0)	13 (17.8)	9.71	-
Lives alone w/ perpetrator	9 (12.3)	4 (5.5)	4 (5.5)		-1.17 (-2.32 - -0.02)*
Lives only w/ non-perpetrators	4 (5.5)	4 (5.5)	8 (11.0)		0.10 (-1.06 – 1.25)
Lives w/ perpetrator and non-perpetrator others	7 (9.6)	4 (5.5)	1 (1.4)		-1.57 (-2.92 - -0.23)*
Lives with Spouse/Partner					
No	17 (23.3)	13 (17.8)	20 (27.4)	1.35	0.50 (-0.42 – 1.42)
Yes	10 (13.7)	7 (9.6)	6 (8.2)		-
Lives with Children					
No	18 (24.7)	13 (17.8)	20 (27.4)	0.97	0.37 (-0.55 – 1.30)
Yes	9 (12.3)	7 (9.6)	6 (8.2)		-
Lives with In-Law Children					

No	25 (33.8)	19 (25.7)	27 (36.5)	1.97	1.50 (-0.99 – 3.99)
Yes	2 (2.7)	1 (1.4)	0 (0)		-
Lives with Grandchildren					
No	21 (28.4)	17 (23.0)	27 (36.5)	6.45*	1.67 (0.17 – 3.16)*
Yes	6 (8.1)	3 (4.1)	0 (0)		-
Lives with Other Relatives					
No	n/a	n/a	n/a	n/a	n/a (non-converge)
Yes					
Live with Friends					
No	n/a	n/a	n/a	n/a	n/a (non-converge)
Yes					
Live with Attendant					
No	n/a	n/a	n/a	n/a	n/a (non-converge)
Yes					
Live with Other Non-Relatives					
No	n/a	n/a	n/a	n/a	n/a (non-converge)
Yes					

CI: Confidence Interval; *p ≤ 0.05, **p < 0.01, ***p < 0.001, †p < 0.10 (borderline).

Appendix D
Overall Findings Summary Table

Independent Variable	EmInc	PhInc	NegInc	EmObj	PhObj	NegObj	EmSub	PhSub	NegSub
Physical Vulnerability									
Health			✓-						
Functional Capacity	✓-	✓-		✓- (b)		✓-	✓-		✓-
Age	✓-	✓-	✓-	✓-	✓-	✓-		✓-	
General Co-Habitation									
Living Arrange				✓+			✓-		✓-
Marital Status	✓(d+)	✓(d+)	✓(d+)					✓(o+)	
Socio-Cultural									
Gender									✓(m+)
Income	✓-	✓-				✓-			
Poverty			✓+						
Education	✓+	✓+		✓+			✓+		
Race/Eth			✓(H-)	✓(H+)					
Geo-Context			✓(s+)						
V-P Relationship									
V Depend on P									
Family									✓-
Spouse/Part				✓+ (b)					
Adult Child									✓-
In-Law Child									
Grandchild					✓+				
Other Relative									
Neighbor									
Friend				✓-					
Other Non-Relative									
Attendant									✓+
Detailed Co-Habitation									
# Co-Habitants				✓+	✓+		✓-		
# Co-Habitants > 60									
Family				✓+ (b)			✓-		

Perpetrator				✓+				✓-	✓-
Perp/Non-Perp Combo				✓+	✓+		✓-		✓-
Non-Perpetrator									
Spouse/Part	✓-	✓- (b)							
Adult Children									
In-Law Children									
Grandchild				✓+					
Other Relatives									
Friends									
Attendant									
Other Non-Relatives	✓+								
Objective Severity							✓+ (b)	✓+	✓+

Em: Emotional; Ph: Physical; Neg: Neglect; Inc: Incidence; Obj: Objective Severity; Sub: Subjective Severity; b: borderline significant; d: divorced; H: Hispanic; s: suburban; o: other; m: male